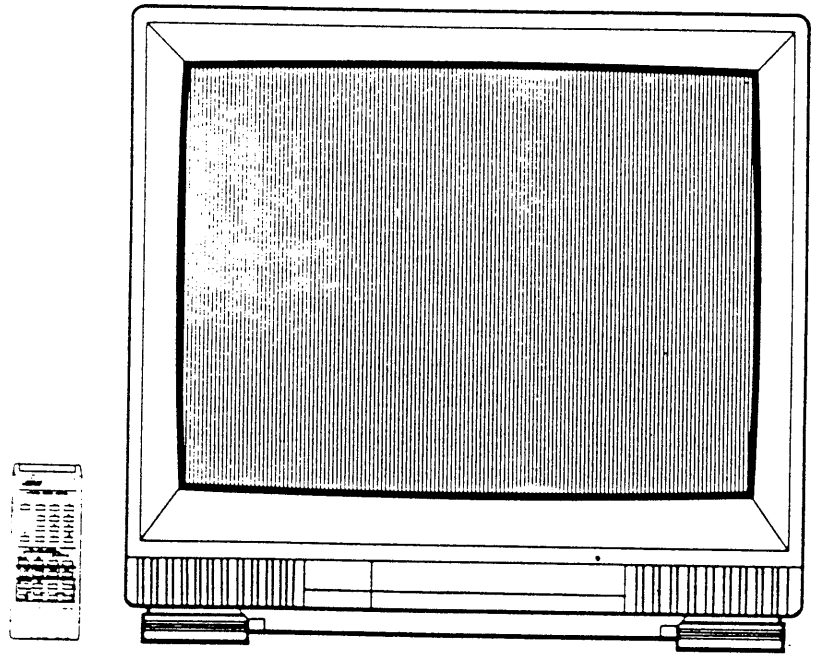
Service Manual

21" MULTI SYSTEM
COLOUR TELEVISION
REMOTE CONTROL

NT 2



CHASSIS REMOVAL (REFER TO PAGES 11 THROUGH 14)

1. Remove 7 screws (A), 4 screws (B) and 1 screw (C) from cabinet back (AB).
2. Disconnect plug (LCN1) from VHF/UHF tuner (TU101).
3. Discharge anode lead at CRT to chassis ground through a 10 k ohm resistor.
4. Disconnect CRT socket P.C. board from CRT (V451).
5. Disconnect anode lead from CRT.
6. Disconnect 5 connectors (LCN551, LCN601, LCN605, LCN606 and LCN801) from main P.C. board.
7. When replacing chassis, reverse the above procedure making certain that all connectors and leads are fastened in their original places.

CRT REMOVAL

CAUTION: Wear shatter-proof goggles and exercise proper handling precautions when working around high vacuum picture tubes.

1. Remove chassis per instructions under CHASSIS REMOVAL.
2. Remove degaussing coil (L602) and braid wire (275) from CRT.
3. Lay cabinet face down on some protective material.
4. Remove 4 CRT mounting screws (D).
5. Remove CRT from cabinet front (AA).
6. To install new CRT, reverse above procedure.
7. Perform purity and convergence adjustments.

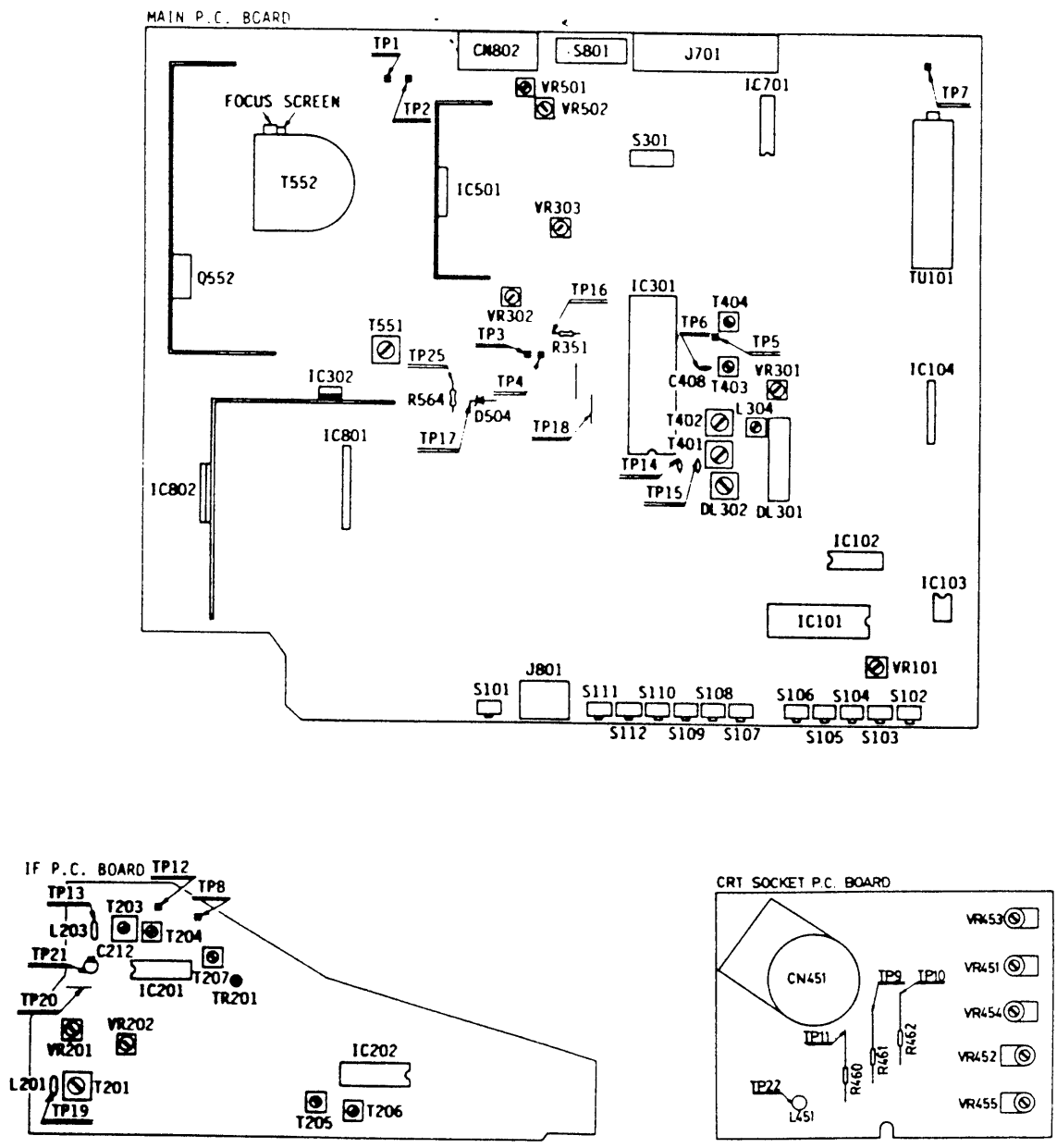


Fig. 1 Test Point Location

INSTALLATION AND SERVICE INSTRUCTIONS

CAUTION: Use an isolation transformer when performing any service on this chassis.

SHUTDOWN CIRCUIT

When the high voltage rises, there are simultaneous voltage increases developed at terminal 6 of the Horizontal Output Transformer (T552) and applied to Base of Q554. If excessive high voltage is produced, the increased voltage developed exceeds the rating of zener diode D504 causing the micro computer (IC101) to stop functioning and the high voltage system is then shut down.

FOCUS ADJUSTMENT

Adjust focus control, located on the Horizontal Output Transformer (T552), for maximum overall definition and fine picture detail.

HORIZONTAL CENTER ADJUSTMENT

1. Connect TV Test Pattern Generator to Aerial Terminal (J1) through TV Channel Signal Generator.
2. Adjust VR303 so that the horizontal marker scale of right and left become equal.

VERTICAL SIZE AND LINEARITY ADJUSTMENT

Adjust Vertical Size control (VR501) and Vertical Linearity control (VR502) so that the picture fills the picture opening from top to bottom and is proportionate to the width.

SUB BRIGHT ADJUSTMENT

1. Connect TV Test Pattern Generator (60 ~ 80dB μ PAL signal) to Aerial Terminal (J1) through TV Channel Signal Generator.
2. Adjust VR302 to obtain a dim pattern.

RF AGC ADJUSTMENT

1. Connect TV Test Pattern Generator (Color Bar signal) to Aerial Terminal (J1) through TV Channel Signal Generator. Adjust TV Channel Signal Generator output level for 55dB μ.
2. Connect positive lead of DC Digital Voltmeter to TP21 and negative lead of DC Digital Voltmeter to TP20.
3. Adjust VR202 so that the DC Digital Voltmeter reading is 6.0V $\pm$ 0.5V.

SOUND IF (6.0MHz) AND SOUND DET (6.0MHz) ADJUSTMENT

1. Connect positive lead of FM Signal Generator (6.0MHz signal) to TP13 and negative lead to TP20. (Standard modulation is 400Hz at 50kHz deviation for sound signal.)
2. Connect positive lead of Oscilloscope to TP8 and negative lead to TP20.
3. Adjust T207 so that the reference line level is +2.0V$\pm$0.2V.
4. Adjust T205 so that the amplitude above and below the +2.0V line becomes equal.
5. Confirm T207 so that the reference line level is +2.0V$\pm$0.2V.

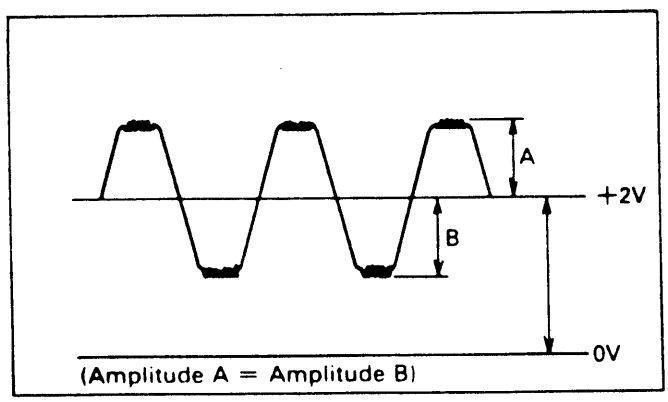


Fig. 2

SOUND IF (4.5MHz) AND SOUND DET (4.5MHz) ADJUSTMENT

1. Connect positive lead of FM Signal Generator (4.5MHz signal) to TP13 and negative lead to TP20. (Standard modulation is 400Hz at 25kHz deviation for sound signal.)
2. Connect positive lead of Oscilloscope to TP8 and negative lead to TP20.
3. Adjust TR201 so that the reference line level is +5.0V.
4. Adjust T206 so that the amplitude above and below the +5.0V line becomes equal.
5. Confirm TR201 so that the reference line level is +5.0V±0.5V.

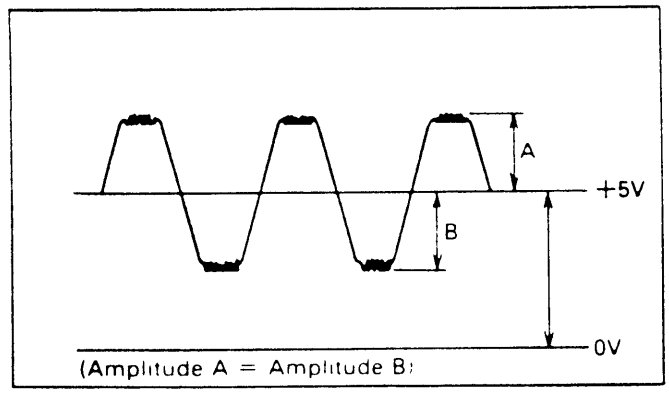


Fig. 3

ON SCREEN DISPLAY POSITION ADJUSTMENT

1. Connect TV Test Pattern Generator (Color Bar signal) to Aerial Terminal (J1) through TV Channel Signal Generator.
2. Press the Stand By switch (S101) to turn the TV on.
3. Press the Preset switch (S107) to enter presetting mode. Band indication, channel position number, color system indication and bars apper on the screen.
4. Adjust VR101 so that the right side of Bars may be the same as shown in Fig. 4.

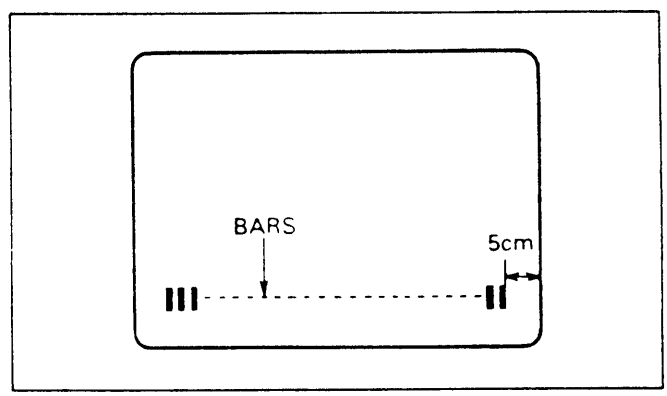


Fig. 4

PAL COLOR ADJUSTMENT

1. Connect TV Test Pattern Generator (1Vp-p Level PAL Color Bar signal) to Video Input Jack(J701).
2. Connect positive lead of Oscilloscope to TP4 and negative lead to TP18.
3. Adjust DL302 so that width of waveform "C" is minimum level.
4. Adjust VR301 so that waveform "A" is the same level as the reference line.
5. Adjust L304 so that waveform "B" is one line.
6. Repeat steps 4 and 5 for optimum level.

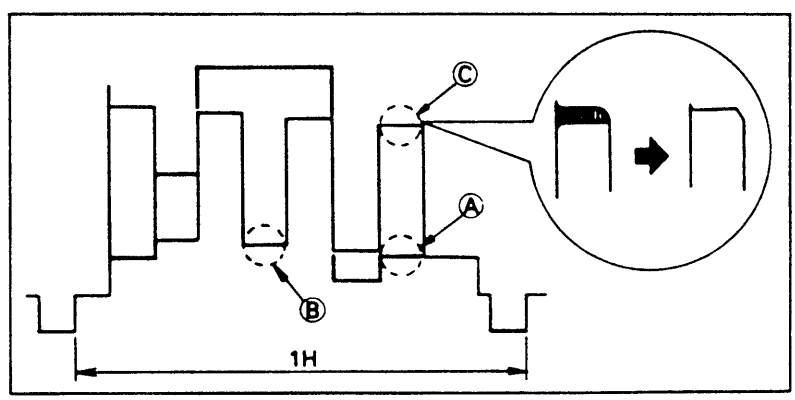


Fig. 5

SECAM IDENT ADJUSTMENT

1. Connect TV Color Bar Generator (SECAM signal 1Vp-p Level) to Video Input Jack (J701).
2. Connect positive lead of DC Digital Voltmeter to TP5 and negative lead to TP18.
3. Adjust T404 so that the output on the Digital Voltmeter will be maximum. (approx. more than 8V)

SECAM BURST CLEANING ADJUSTMENT

1. Connect TV Color Bar Generator (SECAM signal 1Vp-p Level) to Video Input Jack (J701).
2. Connect positive lead of Oscilloscope to TP6 and negative lead to TP18.
3. Adjust T403 so that waveform may be the same as shown in Fig. 6.

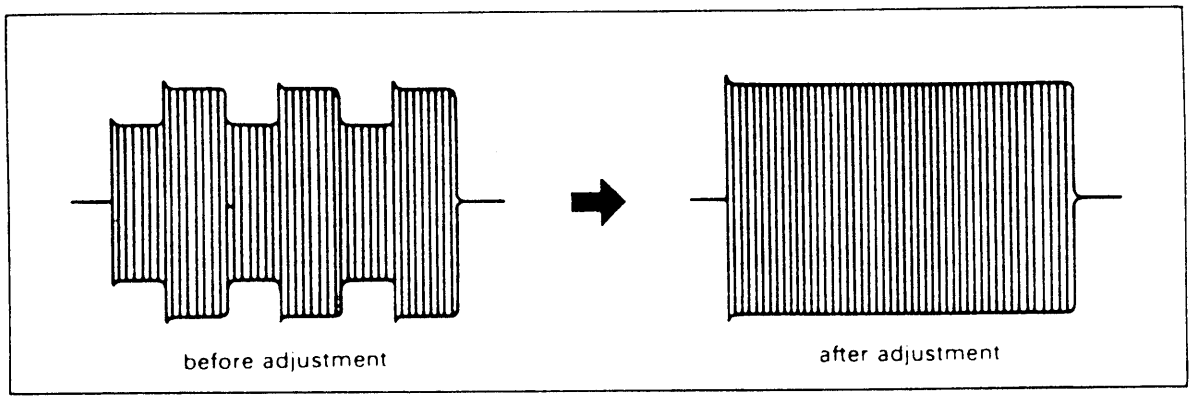


Fig. 6

SECAM COLOR ADJUSTMENT (B-Y DET, R-Y DET)

1. Connect TV Color Bar Generator (SECAM signal 1Vp-p Level) to Video Input Jack (J701).
2. Connect positive lead of Oscilloscope to TP14 and negative lead to TP18.
3. Adjust T401 so that waveform may be the same as shown in Fig. 7.
4. Remove positive lead of Oscilloscope from TP14.
5. Connect positive lead of Oscilloscope to TP15.
6. Adjust T402 so that waveform may be the same as shown in Fig 7.

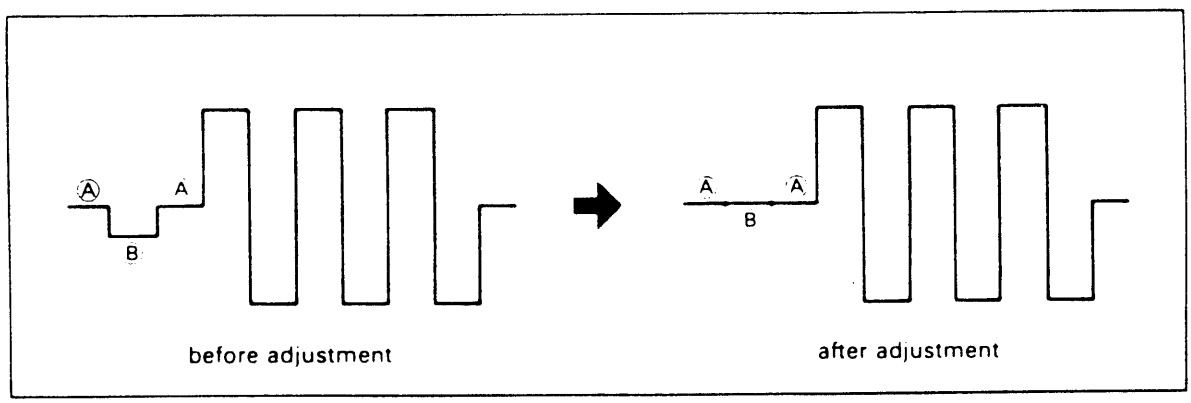


Fig. 7

X-RAY PROTECTOR CIRCUIT CHECK

PERFORM WHENEVER HIGH VOLTAGE CIRCUITRY OR POWER SUPPLY CIRCUITRY IS SERVICED.

1. Connect the antenna leads to the Aerial Terminal (J1) and select a broadcasting station.
2. Turn the Power Switch (S601) and Stand By Switch (S101) on and wait for about 10 minutes.
3. Connect DC Digital Voltmeter to TP17 (positive lead) and TP18 (negative lead).
4. Connect positive lead of Power Supply to TP25 and negative lead to TP18.
5. Increase the voltage between TP17 and TP18 and confirm that X-Ray Protector Circuit functions (picture and sound disappear) when the DC Digital Voltmeter reads 9.1V ± 0.3V.
6. If picture and sound do not disappear check Q553, Q554, D504, D505, D508, R553', R563', R564, R565, R567, R568, R569, R571, C132, C562 and C563.

COLOR PURITY ADJUSTMENT

For best results, it is recommended that the purity adjustment be made in the final receiver location. If the receiver will be moved, perform this adjustment with it facing East. The receiver must have been operating 15 minutes prior to this procedure and the faceplate of the CRT must be at room temperature. The following procedure is recommended while using a Dot/Bar Generator.

1. Check for correct location of all neck components. (Refer to Fig.8)
2. Rough-in the static convergence at the center of the CRT, as explained in the static convergence procedure.
3. Contrast control to maximum CCW position and Brightness control as far CW as possible without causing the picture to "bloom".
4. Rotate the Red Color Cut Off (VR451) and Blue Color Cut Off (VR454) controls to maximum CCW position. Rotate the Green Color Cut Off control (VR453) sufficiently in a CW direction to produce a green raster.
5. Loosen the deflection yoke clamp screw and pull the deflection yoke toward the rear of the CRT.
6. Begin the following adjustment with the tabs on the round purity magnet rings set together. Slowly separate the two tabs while at the same time rotating them to adjust for a uniform green vertical band at the center of the CRT screen.
7. Carefully slide the deflection yoke forward to achieve green purity (Uniform green screen).

   NOTE: Center purity is obtained by adjusting the tabs on the round purity magnet rings, outer edge purity is obtained by sliding the deflection yoke forward.

8. Check for red and blue field purity by reducing the setting of the Green Color Cut Off (VR453) control and alternately increasing the setting of the Red and Blue Color Cut Off (VR451 and VR454) controls and repeat steps 2 through 7, if required.
9. Tighten deflection yoke clamp screw.
10. Perform BLACK AND WHITE ADJUSTMENT procedure.

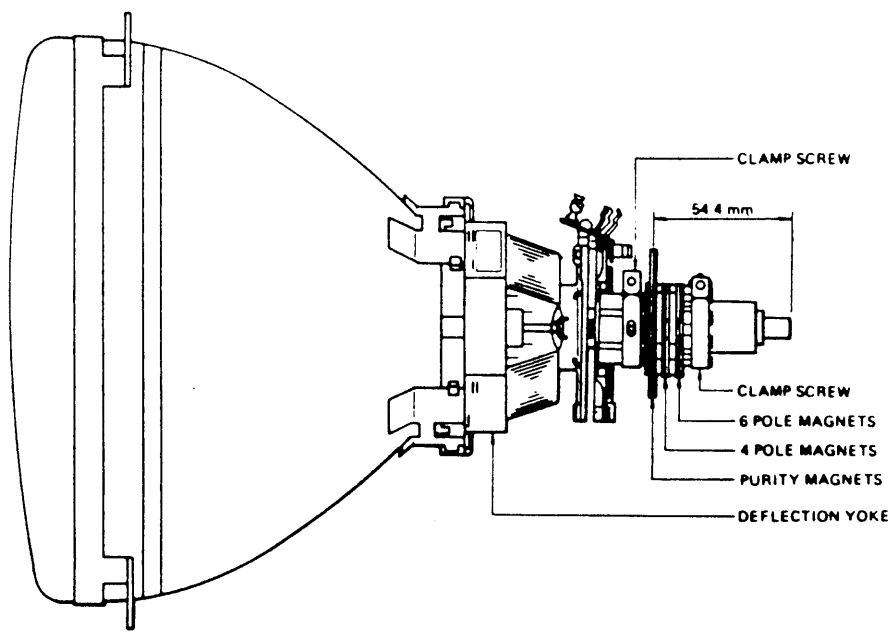


Fig.8 **Picture Tube Neck Component Location**

STATIC CONVERGENCE ADJUSTMENT
(Refer to Fig.8&9)

IMPORTANT: Before proceeding, check location of the convergence magnet assembly on the neck of the CRT as shown in Figure 5. The rear edge of this assembly must be positioned 3/4 inch from the tip of the CRT base. If not properly positioned, convergence adjustment may be difficult, if not impossible.

1. Apply dot or crosshatch pattern from Dot/Bar Generator to receiver. Reduce setting of Brightness and/or Contrast controls to eliminate any blooming in pattern.
2. Rotate Green Color Cut Off control (VR453) fully CCW.
3. Observe the blue and red pattern now appearing on the CRT screen. Locate the 4 pole magnet rings and separate their adjusting tabs approximately the width of one tab.
4. Rotate this pair of magnet rings as a unit (do not change spacing between tabs) to minimize the separation between the blue and red dots (lines).
5. If the blue and red dots (lines) are not completely converged at this point readjust the spacing between the two tabs to complete convergence of the blue and red dots (lines), thus producing magenta dots (lines).
6. If necessary, repeat steps 3, 4 and 5 until proper convergence is achieved.
7. Rotate Green Color Cut Off control (VR453) CW until proper green level is restored and observe the magenta (B/R) and green pattern now appearing on CRT screen.
8. Locate the 6 pole magnet rings and separate their adjusting tabs approximately the width of one tab.
9. Rotate this pair of magnet rings as a unit (do not change spacing between tabs) to minimize the separation between the magenta (B/R) and green dots (lines).
10. If the magenta and green dots (lines) are not completely converged at these points, readjust the spacing between the two tabs to complete convergence of the magenta and green dots (lines).
11. If necessary, repeat steps 8, 9 and 10 until proper convergence is obtained. To prevent accidental misadjustment of the magnets, apply a stripe of paint across all six rings and on to the neck of the CRT.

DYNAMIC CONVERGENCE
(Refer to Fig.10)

Dynamic convergence (convergence of the three color fields at the edges of the CRT screen) is accomplished by proper insertion and positioning of three rubber wedges between the edge of the deflection yoke and the funnel of the CRT. This is accomplished in the following manner.

1. Switch receiver ON and allow it to warm up for 15 minutes.
2. Apply crosshatch pattern from Dot/Bar Generator to receiver. Observe spacing between lines around edges of CRT screen.
3. For the misconvergence shown in Figure 10 (A), tilt the deflection yoke down and insert wedge A between deflection yoke and CRT.
4. For the misconvergence shown in Figure 10 (B), tilt the deflection yoke up and insert wedge B between deflection yoke and CRT.
5. For the misconvergence shown in Figure 10 (C), tilt left side of the deflection yoke and slightly insert the wedge C between deflection yoke and CRT. Then, deeply insert wedges A and B between deflection yoke and CRT.
6. For the misconvergence shown in Figure 10 (D), tilt right side of the deflection yoke and deeply insert wedge C between deflection yoke and CRT. Then, slightly insert and/or extract wedges A and B between deflection yoke and CRT.
7. Alternately change spacing between, and depth of inserting of, the three wedges until proper dynamic convergence is obtained.
8. Use a strong adhesive tape to firmly secure each of the three rubber wedges to the funnel of the CRT.

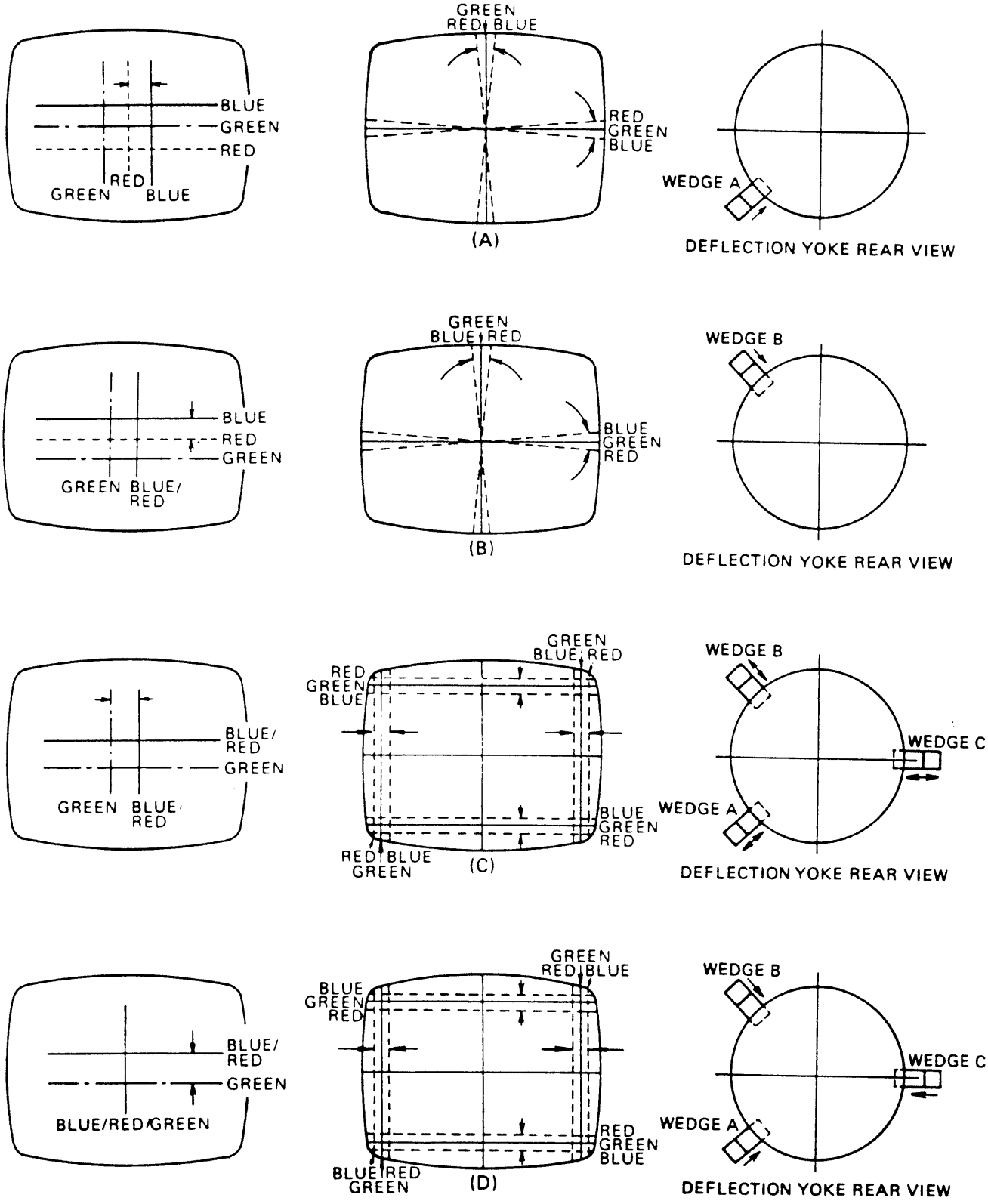


Fig. 9 Static Convergence Adjustment

Fig. 10 Dynamic Convergence Adjustment

BLACK AND WHITE ADJUSTMENT

The purpose of this procedure is to adjust the biases applied to the picture tube to obtain good black and white picture reproduction at all brightness levels while, at the same time achieving maximum useable brightness. Proper RF AGC control adjustment must be verified prior to performing this procedure.

1. With antenna connected to the receiver, tune in picture on a strong received channel. Rotate the Color control to minimum position so that the receiver will not produce a color picture while the following adjustments are being performed.
2. Rotate the Red Color Drive (VR452) and Blue Color Drive (VR455) controls full CW and then back CCW to the center of their rotation ranges.
3. Rotate the Green Color Cut Off (VR453), Red Color Cut Off (VR451) and Blue Color Cut Off (VR454) controls to the full CCW end of their rotation.
4. Set Service/TV switch (S301) to SERVICE position. Adjust the Green Color Cut Off control (VR453) for 10V ± 1V DC at Test Point TP10 (+ side) and TP22 (— side). This voltage should be measured with an oscilloscope.
5. Rotate the Screen control (on horizontal output transformer) to the full CCW end of its rotation. Then, rotate it CW until a dim line of one pronounced color (Green, Red or Blue) is obtained.
6. Alternately rotate the other two color cut off controls CW until a dim white line is obtained.
7. Set Service/TV switch (S301) to TV position.
8. If necessary, touch-up adjustment of the Red and Blue Color Drive controls (VR452 and VR455) to produce a uniform monochrome picture.
9. If the screen does not display good white uniformity, repeat steps 2 through 8.

(CW: clockwise, CCW: counterclockwise)

GENERAL ALIGNMENT INSTRUCTIONS

EQUIPMENT

The test equipment specified below, or its equivalent, is required to properly perform the alignment procedures which are outlined on the following pages. Use of equipment which does not meet these requirements may result in the inability to properly align the receiver. A warm-up period of at least 15 minutes should be allowed for proper stabilization of equipment such as Generators and Oscilloscopes. It is essential that the proper bias voltages, as specified, are maintained during alignment to ensure the proper results.

EQUIPMENT TERMINATIONS

The alignment pads provided with the equipment specified are designed for correct matching of the equipment to the circuits involved. Failure to use proper matching will result in responses which cannot be depended upon as representing the true operation of the receiver.

SIGNAL OVERLOAD

Use of excessive signal from the Sweep/Marker Generator can cause overloading of the receiver circuits. To determine that this condition is not present and that the response curve is true, turn the Sweep/Marker Generator output to zero and then gradually increase the output until a response is obtained. Further increase of the sweep output should not change the configuration of the response except in amplitude. If the response changes in configuration, such as flattening at the top or dropping below the base line at the bottom, decrease the sweep output to restore the proper configuration.
The Oscilloscope gain should be run as high as possible to maintain a usable pattern with the peak-to-peak values specified, thus requiring a lower output from the Sweep/Marker Generator and less chance of overload. Insertion of markers from the Sweep/Marker Generator should not cause distortion of the response. The markers should be kept as small as possible and still remain visible.

RECEIVER CHASSIS PREPARATION

All covers and shields should be in their proper space beore any alignment procedures or performance checks are attepted.

CAUTION:

Remove the AC Power plug making any test equipment connections.

VIDEO IF & AFT SWEEP ALIGNMENT

TEST EQUIPMENT CONNECTIONS

GENERAL ·····Read the General Alignment Instructions before proceeding with this alignment.
CAUTION: Before making any test equipment connections to the receiver chassis, disconnect the AC power plug.
ISOLATION TRANSFORMER·····Receiver AC power cord must be connected to an Isolation Transformer.
OSCILLOSCOPE·····Set AC-DC-GND switch to AC. Set VOLTS DIV. switch to .1 (If necessary, set to another range) and TIME DIV. switch to EXT. Install connecting cables between the H and V inputs and the H and V output of the IF Sweep/Marker Generator.

IF SWEEP/MARKER GENERATOR·····Set SWEEP WIDTH control of full CW rotation with knob pushed in; set FUNCTION switch to TV IF SWEEP; switch on 38.0 MHz crystal markers; adjust MARKER output to produce usable marker size. Connect Red lead of Sweep Output Probe (PR-16A) to test point TP19; connect Black lead to test point TP20. Connect Red lead of Probe Input Detector (PR-15) to test point TP12; Black lead to test point TP20. Set SWEEP CENTER control to 3 o'clock position with knob pushed in, then readjust to properly center horizontal location of pattern on Oscilloscope screen.

STEP	ADJUSTMENT	COMPONENT	PROCEDURE
1	Remove the short on Main P.C. board, as shown in Fig. 11.		
2	38.0 MHz Trap	T204	Adjust T204 to obtain a response curve that approximate the curve illustrated in Fig. 12.
3	33.5 MHz Trap	T201	Adjust T201 to obtain a response curve that approximate the curve illustrated in Fig. 12.
4	Connect red lead of probe input detector (PR-15) to test point TP7 and black lead to test point TP20.		
5	37.8 MHz Trap	T203	Adjust T203 to obtain a response curve that approximates the curve illustrated in Fig. 13.
6	Remove Video IF Sweep Marker Generator and Monitor Scope.		
7	Connect positive lead of DC Digital Voltmeter to TP7 and negative lead of DC Digital Voltmeter to TP20.		
8	AFT Voltage	VR201	Adjust VR201 so that the voltage reading is 3.5V.
9	Connect positive lead of TV Signal Generator (PAL signal, 37.8MHz, 10mV 80dB μ) to TP19 and negative lead of TV Signal Generator to TP20.		
10	AFT Voltage	T203	Adjust T203 so that the voltage reading is 2.0V ± 0.2V.
11	Short on Main P.C. board.		

MAIN P.C. BOARD
(CIRCUIT SIDE)

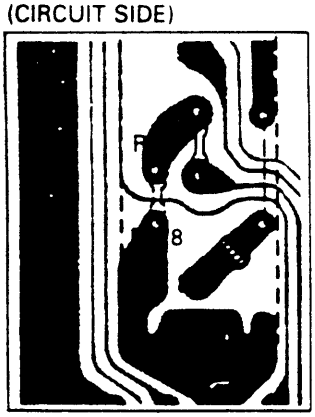


Fig. 11

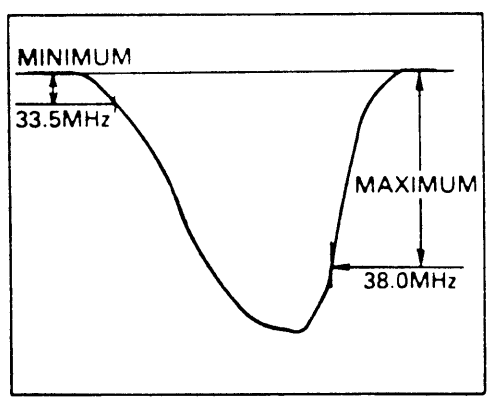


Fig. 12

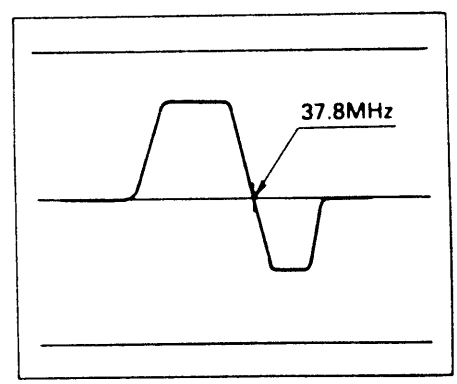


Fig. 13

GENERAL UNIT PARTS LIST

REF. NO.	DESCRIPTION	PART NO.
AA	Cabinet Front Assembly	A410-CTV2108*
AB	Cabinet Back Assembly	A422-CTV2108*
108	Infrared Remote Control Assembly (Accessory)	6142-
140	Lid	1452-04101
141	Lid	1452-
142	Plate	1512=K00101
143	Plate	1512-06102
144	Grille	1524-
145	Grille	1524-
146	Plate	1514-23401
148	Push Button, Power	1662-F04402
150	Name Plate	1712-
164	Spacer	2132-R0131095
165	Shield Plate	2216-510
166	Shield Plate	2216-509
167	Shield Plate	2216-502
168	Shield Plate	2216-503
169	Special Washer	2410-F015
173	Heat Sink	2222-197
174	Heat Sink	2222-262
175	Heat Sink	2222-285
176	Heat Sink	2222-286
177	Holder	2240=K024
178	Holder	2240-530
179	Holder	2240-R0101
180	Holder	2240-7052
181	Holder	2240=K016
182	Holder	2240-389
183	Holder	2240-543
184	Holder	2240-566
185	Holder	2240-567
186	Holder	2240-530
187	Leaf Spring	2652-125
188	Leaf Spring	2652-126
189	Spacer	2132-383
190	Spacer	2132-347
197	Self-Tapping Screw (+) (3 x 12 mm)	2347-R0130124
200	Self-Tapping Screw (+) (4 x 12 mm)	2347-R0140124
202	Self-Tapping Screw (+) (4 x 20 mm)	2347-R0140204
205	Special Self-Tapping Screw	2340-050
206	Special Washer	2410-F013
208	Bushing	2114-F011
210	Metal Washer	2401-0673
213	Special Fastener	2430-009
215	Eyelet	2424-30251
275	Braid Wire	4105-00205

ELECTRICAL PARTS LIST

REF. NO.	DESCRIPTION	PART NO.
	RESISTORS	
⚠R176	2.2 ohm 1/4 W Fuse	5102-2R25116
⚠R557	2.2 ohm 1/4 W Fuse	5102-2R25116
⚠R601	2.2 ohm 5 W Cement	5275-2R2691
⚠R602	0.5 ohm 1/2 W Carbon	5135-0R5J50P
⚠R603	47 k ohm 1 W Metal	5171-473533
⚠R604	47 ohm 2 W Metal	5173-470533
⚠R605	27 ohm 2 W Metal	5173-270533
⚠R606	680 ohm 1/2 W Carbon	5135-681J50P
⚠R607	33 ohm 1 W Metal	5171-330533
⚠R608	470 k ohm 1/4 W Carbon	5134-474J25P
⚠R609	270 k ohm 1/4 W Carbon	5134-274J25P
⚠R610	1 k ohm 1/6 W Carbon	5232-102J16P
⚠R611	560 ohm 1/6 W Carbon	5232-561J16P
⚠R612	100 ohm 1/4 W Carbon	5134-101J25P
⚠R613	0.5 ohm 1/2 W Carbon	5135-0R5J50P
⚠R614	0.5 ohm 1/2 W Carbon	5135-0R5J50P
⚠R651	8.2 M ohm 1/2 W Carbon	5135-825J50P
⚠R722	47 ohm 1/4 W Fuse	5102-4705116

REF. NO	DESCRIPTION	PART NO.
RA101	Packaged Resistor, 22 k ohm x 7	5212-S0407223
VR101	Variable Resistor, 10 k ohm, On Screen Display Position Adjust	5101-10301934
VR201	Variable Resistor, 500 k ohm, AFT	5101-50401934
VR202	Variable Resistor, 5 k ohm, AGC	5101-50201934
VR301	Variable Resistor, 1 k ohm, PAL Color Adjust	5101-10201934
VR302	Variable Resistor, 10 k ohm, Sub Bright Adjust	5101-10301934
VR303	Variable Resistor, 5 k ohm, Horizontal Center Adjust	5101-50201934
VR451	Variable Resistor, 3 k ohm, Red Color Cut Off Adjust	5101-30201810
VR452	Variable Resistor, 300 ohm, Red Color Drive Adjust	5101-30101810
VR453	Variable Resistor, 3 k ohm, Green Color Cut Off Adjust	5101-30201810
VR454	Variable Resistor, 3 k ohm, Blue Color Cut Off Adjust	5101-30201810
VR455	Variable Resistor, 300 ohm, Blue Color Drive Adjust	5101-30101810
VR501	Variable Resistor, 50 k ohm, Vertical Size Adjust	5101-50301934
VR502	Variable Resistor, 200 ohm, Vertical Linearity Adjust	5101-20101934
	CAPACITORS	
⚠C601	0.1 μF ±20% AC250V Metalized Polyplopylene	5352-1040963
⚠C602	0.1 μF ±20% AC250V Metalized Polyplopylene	5352-1040963
*C603	1000 pF ±5% 2000V Ceramic	5361-1024427
*C604	1000 pF ±5% 2000V Ceramic	5361-1024427
*C605	1000 pF ±5% 2000V Ceramic	5361-1024427
*C606	1000 pF ± 5% 2000V Ceramic	5361-1024427
*C607	220 μF ±20% 400V Electrolytic	5341-S19PM227
*C608	1000 pF ±5% 2000V Ceramic	5361-1024427
⚠C609	0.022 μF ±10% 400V Mylar	5354-2231852
⚠C610	33 μF ±20% 100V Electrolytic	5345-336-100
⚠C611	0.033 μF ±10% 50V Mylar	5354-333K1HM
⚠C612	2200 pF ± 10% 50V Ceramic	5361-222KB
⚠C613	10 μF ±20% 100V Electrolytic	5345-106-100
*C651	1000 pF ±20% AC400V Ceramic	5361-1020426
TR201	Trimmer Capacitor	5371-93
	INTEGRATED CIRCUITS	
IC101	M3430501	5654-M3430501
IC102	μPD6335C	5654-uPD6335C
IC103	M6M80011AP	5654-M6M800AP
IC104	LA7910	5653-LA7910
IC105	MN1280R	5654-MN1280R
IC201	M51496P	5653-M51496P
IC202	TA8615N	5653-TA8615N
IC301	TA8659AN	5653-TA8659AN
IC302	TA78012A	5653-TA78012A
IC501	AN5515	5653-AN5515
IC551	HZT33	5635-HZT33
⚠IC601	STR59041	5653-STR59041
⚠IC602	ON3161(R)	5624-ON3161(R
IC621	TA78005A	5653-TA78005A
IC701	TA8628N	5653-TA8628N
IC801	AN5836	5653-AN5836
IC802	TA8211AH	5653-TA8211AH
	TRANSISTORS	
Q101	2SC1815(GR)	5613-1815(GR)
Q102	2SC1815(GR)	5613-1815(GR)
Q103	2SC1815(GR)	5613-1815(GR)
Q104	2SC1815(GR)	5613-1815(GR)
Q105	2SC1815(GR)	5613-1815(GR)

REF. NO.	DESCRIPTION	PART NO.
Q107	2SC1815(GR)	5613-1815(GR)
Q108	2SC1815(GR)	5613-1815(GR)
Q109	2SC1815(GR)	5613-1815(GR)
Q110	2SC1815(GR)	5613-1815(GR)
Q111	2SC1815(GR)	5613-1815(GR)
Q113	2SC1815(GR)	5613-1815(GR)
Q114	2SC1815(GR)	5613-1815(GR)
Q115	2SC1815(GR)	5613-1815(GR)
Q116	2SC1815(GR)	5613-1815(GR)
Q117	2SC1815(GR)	5613-1815(GR)
Q118	2SC1815(GR)	5613-1815(GR)
Q201	2SC1923(Y)	5613-1923(Y)
Q202	2SA1015(GR)	5611-1015(GR)
Q203	2SC1815(GR)	5613-1815(GR)
Q204	2SC2120(Y)	5613-2120(Y)
Q205	2SC1815(GR)	5613-1815(GR)
Q301	2SC1815(GR)	5613-1815(GR)
Q302	2SC1815(GR)	5613-1815(GR)
Q303	2SC1815(GR)	5613-1815(GR)
Q304	2SC1815(GR)	5613-1815(GR)
Q305	2SA1015(GR)	5611-1015(GR)
Q306	2SA1015(GR)	5611-1015(GR)
Q307	2SC1815(GR)	5613-1815(GR)
Q308	RN1206	5613-RN1206
Q309	2SC1815(GR)	5613-1815(GR)
Q310	2SC1815(GR)	5613-1815(GR)
Q451	2SC3063	5613-3063
Q452	2SC3063	5613-3063
Q453	2SC3063	5613-3063
Q551	2SC1473A(R)	5613-1473A(R)
⚠Q552	2SD1846	5614-1846
Q553	2SA1015(GR)	5611-1015(GR)
Q554	2SC1815(GR)	5613-1815(GR)
⚠Q601	2SD1423A(S)	5614-1423A(S)
⚠Q602	2SB621(S)	5612-621(S)
⚠Q603	2SD965(R)	5614-965(R)
⚠Q604	2SD965(R)	5614-965(R)
Q621	2SC1815(GR)	5613-1815(GR)
Q701	2SA1015(GR)	5611-1015(GR)
Q702	2SA1015(GR)	5611-1015(GR)
Q703	2SA1015(GR)	5611-1015(GR)
Q704	2SA1015(GR)	5611-1015(GR)
Q705	2SA1015(GR)	5611-1015(GR)
Q706	2SA1015(GR)	5611-1015(GR)
Q707	2SC1815(GR)	5613-1815(GR)
Q801	2SC1815(GR)	5613-1815(GR)
Q802	2SC1815(GR)	5613-1815(GR)
Q803	2SC1815(GR)	5613-1815(GR)
Q804	2SC1815(GR)	5613-1815(GR)
Q805	2SC1815(GR)	5613-1815(GR)
Q806	2SC1815(GR)	5613-1815(GR)
Q807	2SC1815(GR)	5613-1815(GR)
	DIODES	
D101	Light Emitting Diode, GL9HD10, Power Indicator	5637-GL9HD10
D103	1SS133	5636-1SS133
D104	Zener Diode, RD5.1EB	5635-RD5R1EB
D105	1SS133	5636-1SS133
D106	1SS133	5636-1SS133
D107	1SS133	5636-1SS133
D108	1SS133	5636-1SS133
D109	1SS133	5636-1SS133
D110	1SS133	5636-1SS133
D111	1SS133	5636-1SS133
D112	1S2473	5636-1S2473
D113	1SS133	5636-1SS133
D114	1SS133	5636-1SS133
D115	1SS133	5636-1SS133
D116	1SS133	5636-1SS133
D117	1SS133	5636-1SS133

REF. NO.	DESCRIPTION	PART NO.
D118	1SS133	5636-1SS133
D119	1SS133	5636-1SS133
D120	1SS133	5636-1SS133
D121	1SS133	5636-1SS133
D122	1SS133	5636-1SS133
D123	1SS133	5636-1SS133
D124	1SS133	5636-1SS133
D126	Zener Diode, RD5.1EB	5635-RD5R1EB
D127	1SS133	5636-1SS133
D128	1SS133	5636-1SS133
D129	1S2473	5636-1S2473
D201	1SS133	5636-1SS133
D202	1S2186	5636-1S2186
D204	1SS133	5636-1SS133
D205	Zener Diode, RD10EB	5635-RD10EB
D207	1SS133	5636-1SS133
D301	1SS133	5636-1SS133
D302	1SS133	5636-1SS133
D303	1SS133	5636-1SS133
D304	1SS133	5636-1SS133
D305	Zener Diode, RD5.1EB	5635-RD5R1EB
D306	Zener Diode, RD9.1EB	5635-RD9R1EB
D307	1SS133	5636-1SS133
D308	1SS133	5636-1SS133
D309	1SS133	5636-1SS133
D310	Zener Diode, RD9.1EB	5635-RD9R1EB
D311	Zener Diode, RD20EB	5635-RD20EB
D313	1SS133	5636-1SS133
D314	1SS133	5636-1SS133
D451	1S2473	5636-1S2473
D452	1S2473	5636-1S2473
D453	1S2473	5636-1S2473
D501	S5566B	5632-S5566B
D502	Zener Diode, RD7.5EB	5635-RD7R5EB
D503	1SS133	5636-1SS133
D504	Zener Diode, RD9.1EB	5635-RD9R1EB
D505	1SS133	5636-1SS133
D508	1SS133	5636-1SS133
D509	1SS133	5636-1SS133
D551	EU02V0	5632-EU02V0
⚠D601	D2SBA60	5685-D2SBA60
⚠D602	BYD33M	5632-BYD33M
⚠D603	EU02V0	5632-EU02V0
⚠D604	EU02V0	5632-EU02V0
⚠D605	EU02V0	5632-EU02V0
⚠D606	EU02V0	5632-EU02V0
⚠D607	EU02V0	5632-EU02V0
⚠D608	EU02V0	5632-EU02V0
⚠D621	BYV95C	5632-BYV95C
⚠D622	EU02V0	5632-EU02V0
⚠D623	EU02V0	5632-EU02V0
⚠D624	EU02V0	5632-EU02V0
⚠D625	ERA15-06	5632-ERA15-06
⚠D626	ERA15-06	5632-ERA15-06
⚠D627	ERA15-06	5632-ERA15-06
⚠D628	ERA15-06	5632-ERA15-06
D629	Zener Diode, RD9.1EB	5635-RD9R1EB
D631	Zener Diode, RD18EB	5635-RD18EB
D632	Zener Diode, RD18EB	5635-RD18EB
D633	Zener Diode, RD18EB	5635-RD18EB
D801	1SS133	5636-1SS133
D802	1SS133	5636-1SS133
D803	1SS133	5636-1SS133
D804	1SS133	5636-1SS133
D805	1S2473	5636-1S2473
	COILS AND TRANSFORMERS	
L101	Coil	5995-101J69
L102	Coil	5995-101074
L103	Coil	5995-101074
L201	Coil	5995-3R3J69
L203	Coil	5995-3R3J69

REF. NO.	DESCRIPTION	PART NO.
L204	Coil	5995-R82098
L205	Coil	5995-100J69
L206	Coil	5995-1R8098
L207	Coil	5995-100J69
L208	Coil	5995-220098
L209	Coil	5995-8R2J69
L210	Coil	5995-120J69
L301	Coil	5995-390J107
L301A	Coil	5995-560J69
L303	Coil	5995-180J69
L304	Coil	5932-11201
L305	Coil	5995-150J69
L306	Coil	5995-150J69
L307	Coil	5995-220J69
L308	Coil	5995-560J69
L309	Coil	5995-101J69
L312	Coil	5995-101J69
L451	Coil	5995-101J69
L552	Coil	5995-620088
⚠L601	Coil	5583-00126
⚠L602	Coil with Connector (w/LCN601 2 Pos.)	4994-013
L603	Coil	5995-330K108
L604	Coil	5995-120J69
L605	Coil	5995-330K108
L621	Coil	5995-330K108
L622	Coil	5995-100J69
L623	Coil	5995-330K108
L801	Coil	5995-101074
T201	Coil	5933-S1502
T203	Coil	5933-04113
T204	Coil	5932-11101
T205	Transformer	5562-0049
T206	Transformer	5562-11001
T207	Transformer	5562-0049
T401	Coil	5933-S1501
T402	Coil	5933-S1501
T403	Transformer	5562-10301
T404	Transformer	5562-10801
⚠T551	Transformer	5581-00164
⚠T552	Transformer	4992-038
⚠T601	Transformer, Power	5584-S7401
⚠T602	Transformer, Power	5584-S8101

MISCELLANEOUS

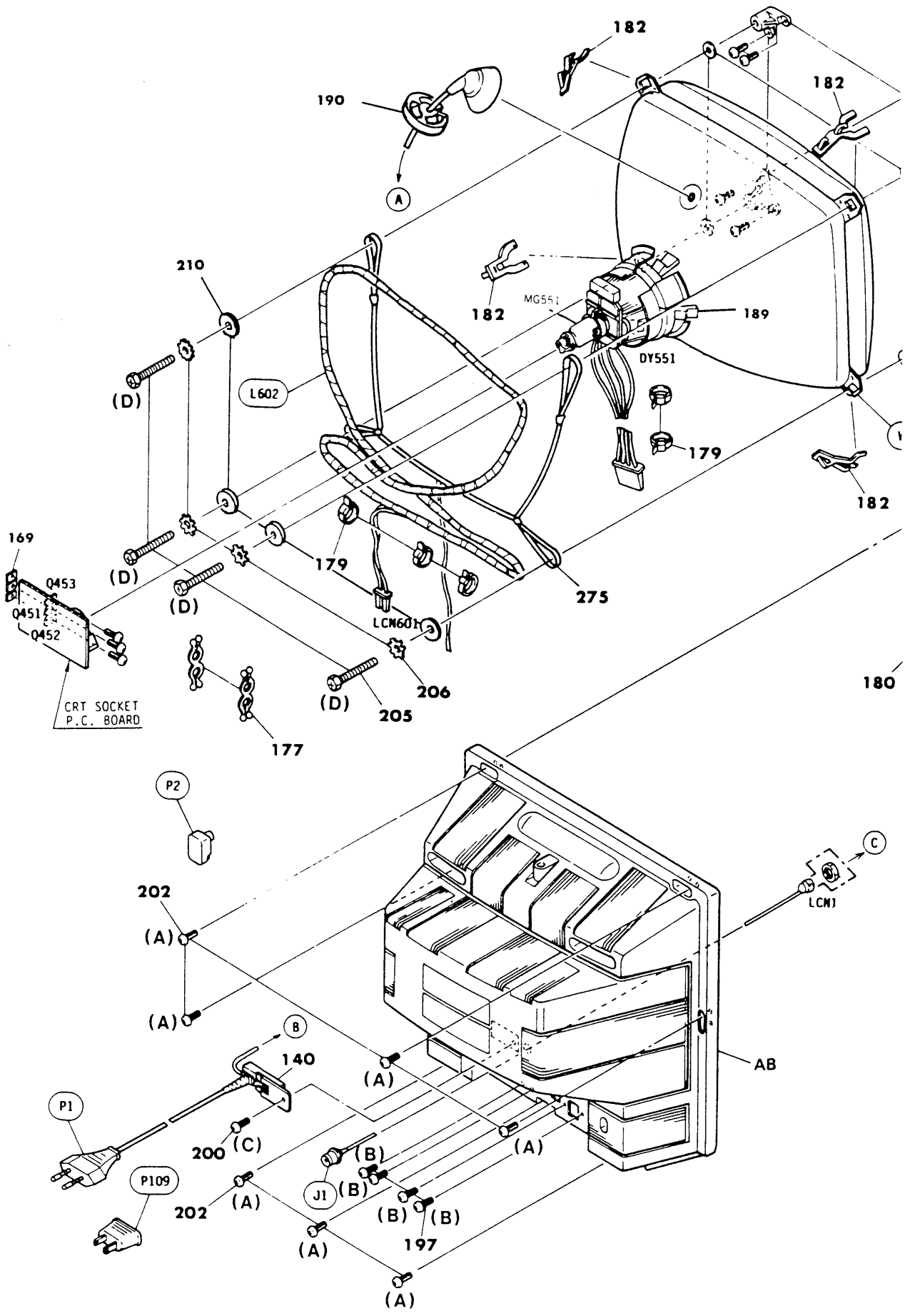
CF201	Ceramic Filter	5671-0153
CF202	Ceramic Filter	5671-0130
CF203	Ceramic Filter	5671-0132
CF204	Ceramic Filter	5671-0153
CF205	Ceramic Filter	5671-0031655
CF206	Ceramic Filter	5671-0262
CF207	Ceramic Filter	5671-0162
CF208	Ceramic Filter	5671-0144
CF209	Ceramic Filter	5671-0021N655
CF302	Ceramic Filter	5671-0143N362
CN101	Connector	4443-087175
CN201	Connector	4443-077175
CN202	Connector	4443-077175
⚠CN451	CRT Socket	4474-204
⚠CN551	Connector	4443-0401142
⚠CN601	Connecotr	4443-0201105
CN605	Connector	4443-0301142
CN606	Connector	4443-02801005
CN801	Connector	4443-02801004
CN802	Terminal, Speakers	4214-230
DL301	Delay Line	5901-024
DL302	Delay Line	5901-017
FB601	Ferrite Bead	5597-50301
FB602	Ferrite Bead	5597-50301
FB621	Ferrite Bead	5597-50301
FB622	Ferrite Bead	5597-07056

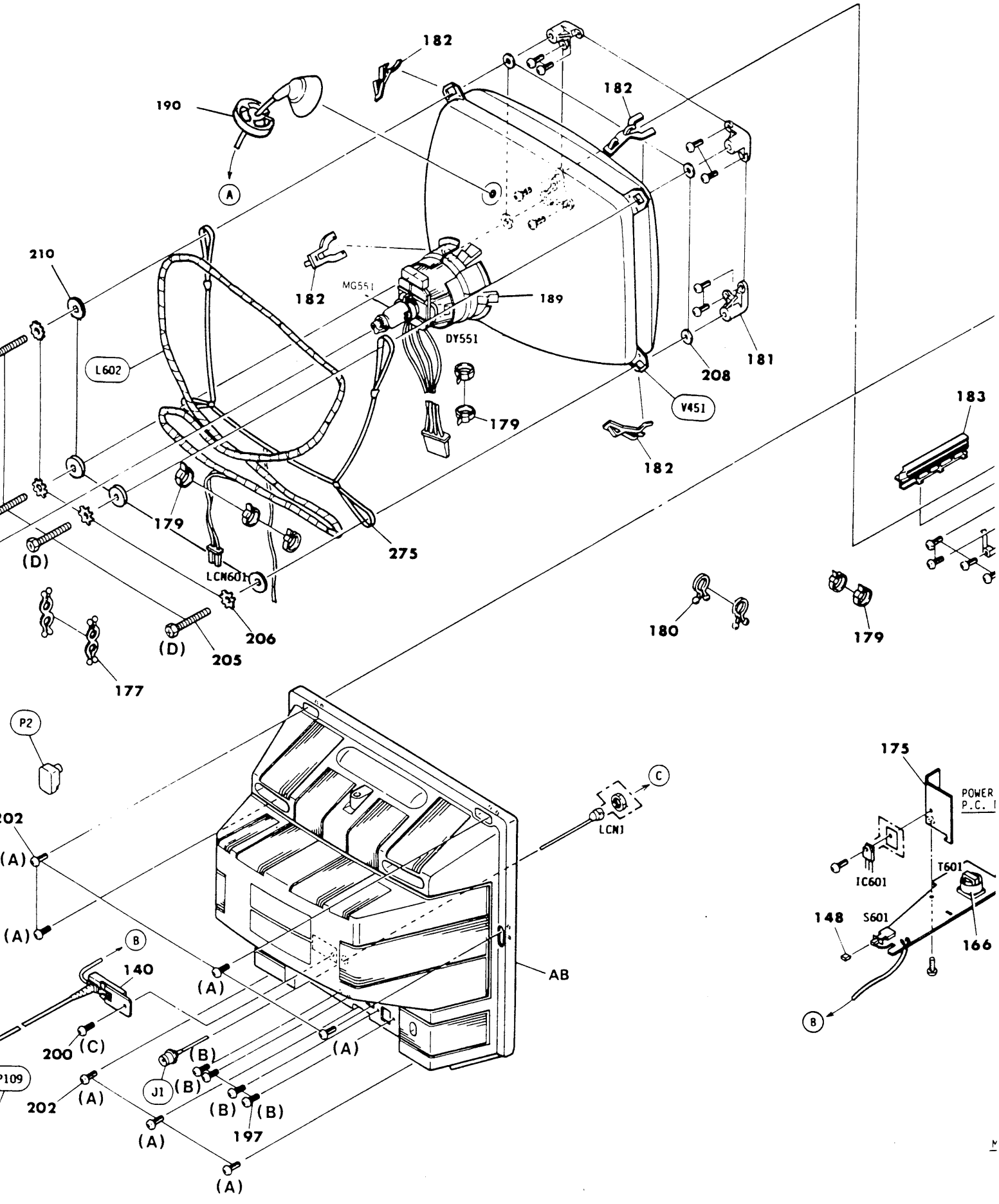
REF. NO.	DESCRIPTION	PART NO.
FH1	Fuse Holder	4472-0131
FH2	Fuse Holder	4472-0131
⚠FU601	Fuse, 4A 250V	5732-402055
J1	Cord with Plug, Aerial (w/LCN1)	4161-02602251
J701	Pin Jack, Audio Video Input/Output	4489-03501006
J801	Jack, ST. Headphones	4451-00171
JL101	Jumper Lead	4242-R0204121
JL102	Jumper Lead	4242-R0104121
JL103	Jumper Lead	4242-R0104101
JL451	Jumper Lead	4242-R0204351
JL452	Jumper Lead	4242-R0205501
JL801	Jumper Lead	4242-R0204251
LCN101	Connector	4443-05901008
LCN201	Connector	4443-05901007
LCN202	Connector	4443-05901007
LCN605	Connector with Lead Wire	4163-05903003
LCN606	Connector with Lead Wire	4163-00956005
LCN801	Connector with Lead Wire	4163-00956004
LUG1	Lug	4211-4
⚠P1	AC Cord with Plug	4161-03305202
P2	Antenna Adaptor	1398-
⚠P109	AC Socket Adaptor (Accessory)	4474-29
RCV101	Remote Control Receiver Unit	6143-01301
S101	Push Switch, Stand by	4431-A010193
S102	Push Switch, Channel Up	4431-A010193
S103	Push Switch, Channel Down	4431-A010193
S104	Push Switch, Volume Up	4431-A010193
S105	Push Switch, Volume Down	4431-A010193
S106	Push Switch, TV/Video	4431-A010193
S107	Push Switch, Preset	4431-A010193
S108	Push Switch, Tune Up (MIN.)	4431-A010193
S109	Push Switch, Tune Down (HOUR)	4431-A010193
S110	Push Switch, Up Search	4431-A010193
S111	Push Switch, Full Auto Preset	4431-A010193
S112	Push Switch, Skip (CLOCK)	4431-A010193
S301	Slide Switch, Service	4421-012415
⚠S601	Push Switch, Power	4431-S2101102
S801	Slide Switch, Speaker	4421-01701041
SF201	SAW Filter	5679-00401380
SP801	Speaker, 8 ohm	5812-0011C830
SP802	Speaker, 8 ohm	5812-0011C830
⚠TH601	Posistor	5192-00501
TU101	VHF/UHF Tuner Assembly	6119-10702
⚠V451	CRT	5721-004CT51F
DY551	Coil, D-Yoke	4993=
MG551	Magnet	4291-15
X101	Crystal Osc.	5691-S0201403
X201	Ceramic Osc.	5693-CS500E61
X301	Ceramic Osc.	5693-CSB503F2
X302	Crystal Osc.	5691-0035795D
X303	Crystal Osc.	5691-0044336A

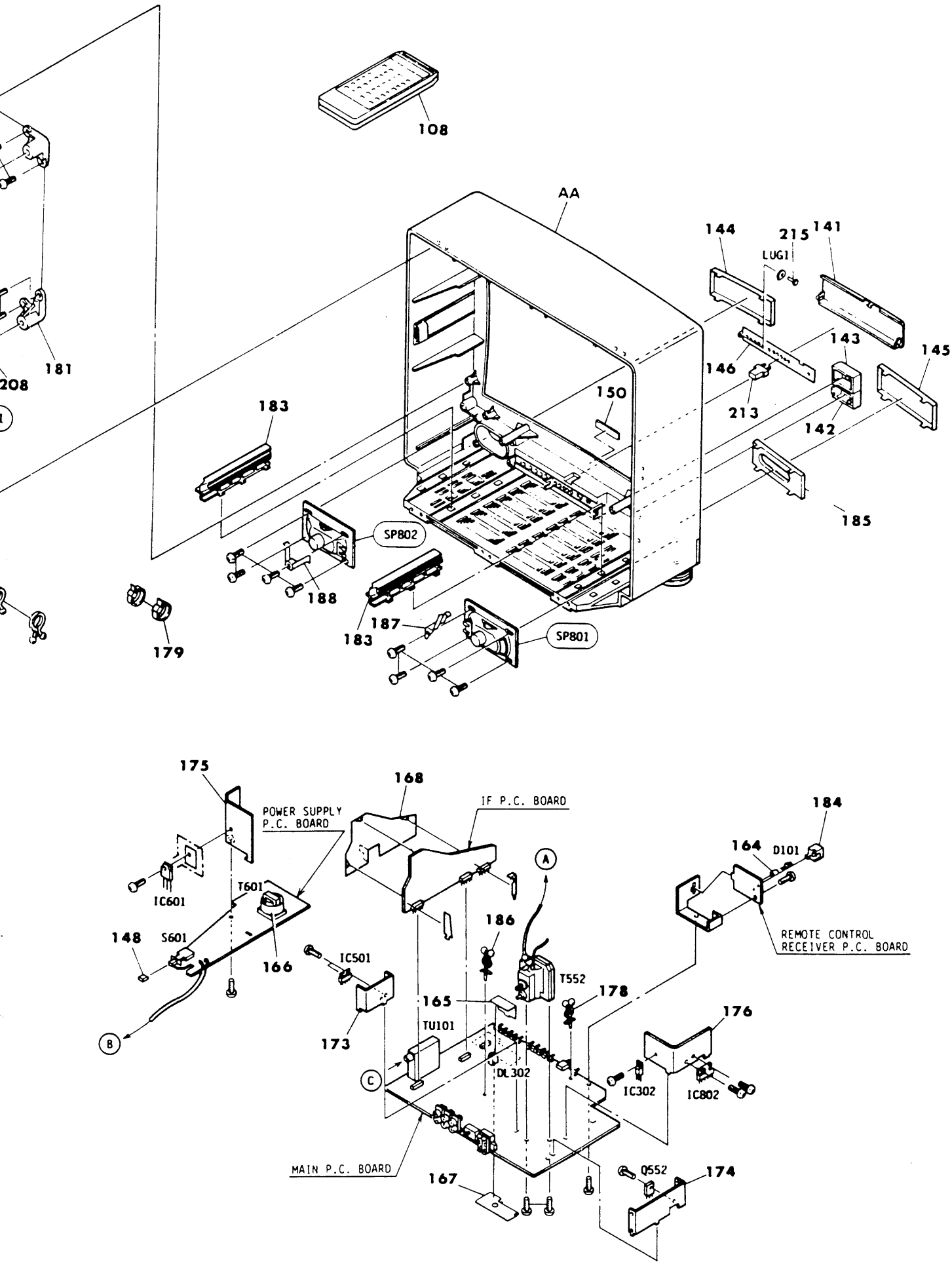
⚠ **SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.**

NOTE: The parts not listed in this parts list are not supplied.

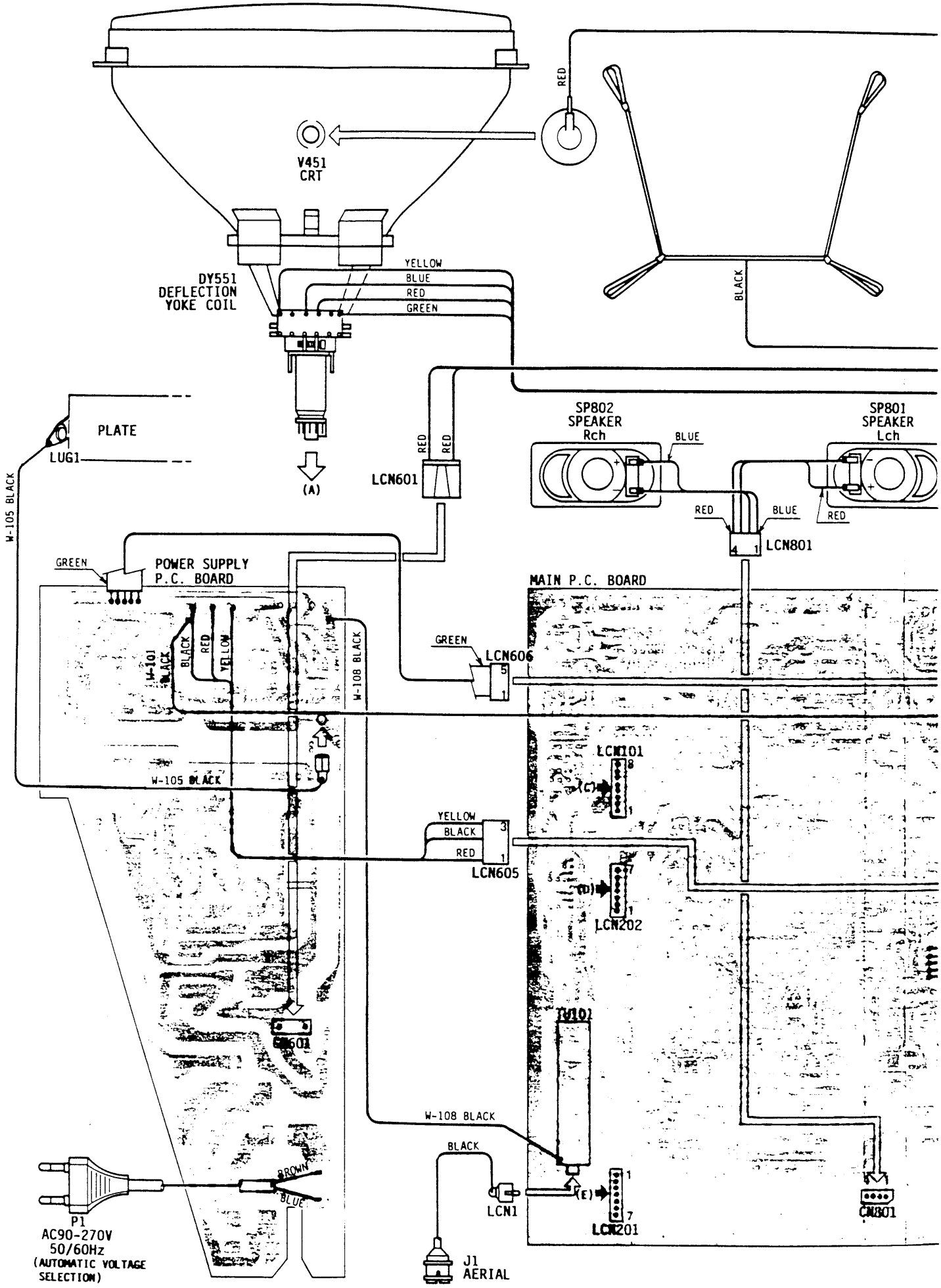
EXPLODED VIEW

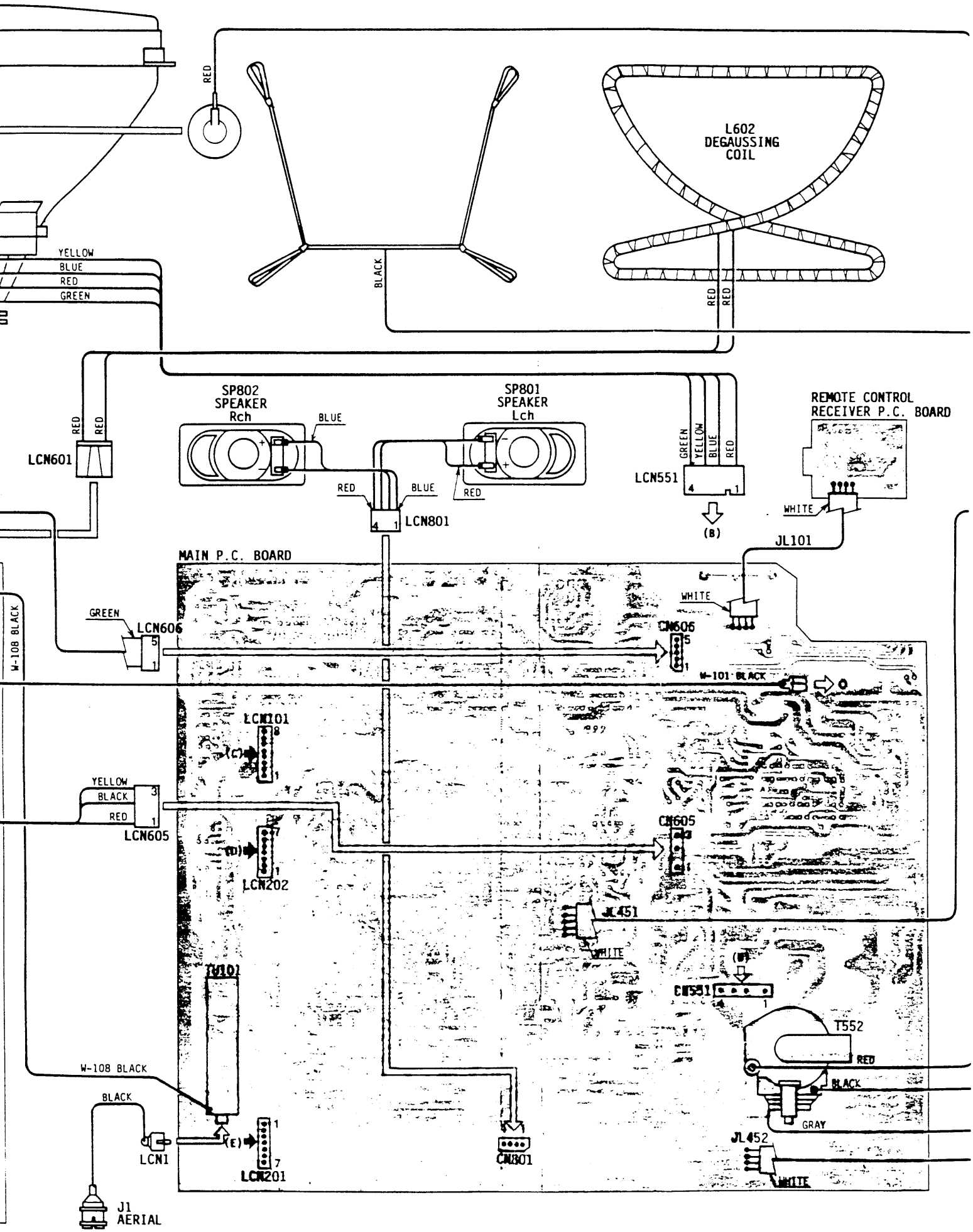


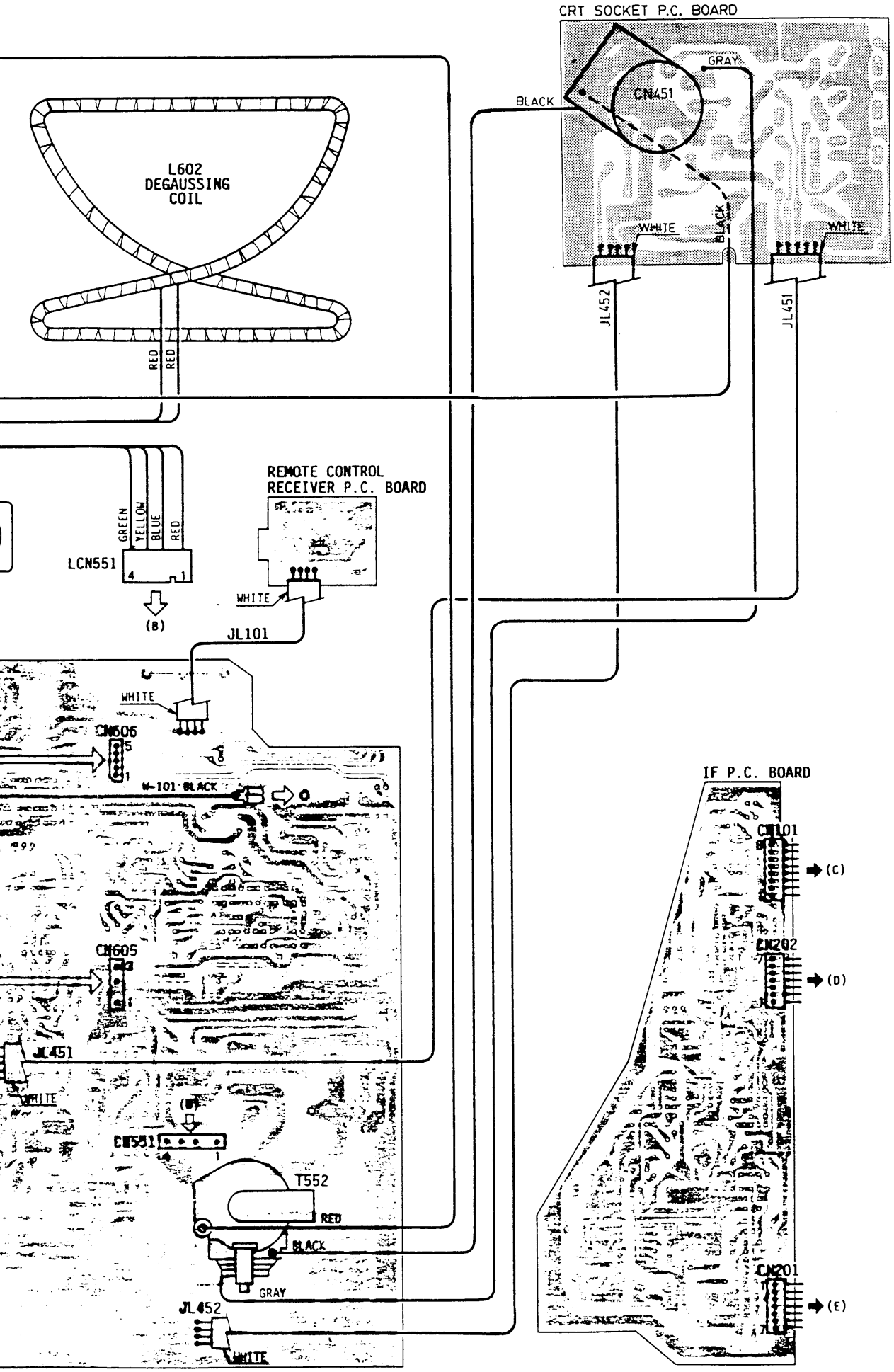

182
190
182
A
210
182
MG551
189
DY551
L602
208
181
V451
179
182
183
179
275
(D)
LCN601
206
(D)
205
177
180
179
P2
202
(A)
(A)
LCN1
C
AB
B
140
(A)
200
(C)
(A)
(B)
(A)
202
(A)
J1
(B)
(B)
(B)
(A)
197
(A)
175
POWER
P.C. I
IC601
T601
148
S601
166
B


108
AA
144
215
141
LUG1
143
145
146
213
142
150
183
185
SP802
188
187
183
SP801
179
181
208
175
168
POWER SUPPLY
P.C. BOARD
IF P.C. BOARD
184
164
D101
A
T601
IC601
186
148
S601
166
IC501
T552
178
165
176
TU101
173
DL302
IC302
IC802
B
C
MAIN P.C. BOARD
167
Q552
174
REMOTE CONTROL
RECEIVER P.C. BOARD

WIRING DIAGRAM




RED
L602
DEGAUSSING
COIL
YELLOW
BLUE
RED
GREEN
BLACK
RED
RED
SP802
SPEAKER
Rch
SP801
SPEAKER
Lch
BLUE
RED
BLUE
RED
LCN601
RED
RED
LCN801
LCN551
GREEN
YELLOW
BLUE
RED
REMOTE CONTROL
RECEIVER P.C. BOARD
WHITE
JL101
(B)
MAIN P.C. BOARD
GREEN
LCN606
W-108 BLACK
CN606
WHITE
W-101 BLACK
LCN101
YELLOW
BLACK
RED
LCN605
CN605
LCN202
JL451
WHITE
W101
CN551
T552
RED
BLACK
GRAY
W-108 BLACK
BLACK
LCN1
LCN201
CN301
JL452
WHITE
J1
AERIAL


CRT SOCKET P.C. BOARD
CN451
GRAY
BLACK
WHITE
BLACK
WHITE
JL452
JL451
L602
DEGAUSSING
COIL
RED
RED
REMOTE CONTROL
RECEIVER P.C. BOARD
GREEN
YELLOW
BLUE
RED
LCN551
4
1
(B)
WHITE
JL101
WHITE
CN606
5
1
M-101 BLACK
CN605
JL451
WHITE
(B)
CN551
1
T552
RED
BLACK
GRAY
JL452
WHITE
IF P.C. BOARD
CN101
(C)
CN202
(D)
CN201
(E)

SCHEMATIC DIAGRAM NOTES

1. All resistors are carbon unless otherwise noted.
   - (C) : Cement Resistor
   - (F) : Fuse Resistor
   - (M) : Metal Resistor
   - (S) : Solid Resistor
2. All resistance values are in Ω. kΩ = 1000Ω MΩ = 1000kΩ
3. The wattage of resistor is 1/6W unless otherwise noted.
4. The marks of capacitors are as follows:
   - ⫩ : Ceramic Capacitor
   - ⧓ : Electrolytic Capacitor
   - (A) : Al. Solid Capacitor
   - (C) : Semiconductor Capacitor
   - (E) : Metalized Polyester Capacitor
   - (I) : Mica Capacitor
   - (M) : Mylar Capacitor
   - (P) : Polypropylene Capacitor
   - (S) : Stylor Capacitor
   - (T) : Tantalum Electrolytic Capacitor
5. All capacitance values are in μF unless otherwise noted. pF = μμF
6. The DC work voltage of capacitor is 50V unless otherwise noted.
7. Voltages reading from common ground are measured with V.T.V.M. under no signal conditions.
8. This is a standard schematic diagram. Some set may be modified slightly for better performance.
9. SERVICE/TV switch (S301) is in TV position.
10. SPEAKER switch (S801) is in INT position.

⚠ **SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.**

VOLTAGE CHART (all in volts)

OPERATION CONDITION V-HOLD ..... STOP THE PICTURE FROM ROLLING MOTION

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC101	4.8	2.8	0	0	—	0	4.8	3.4	4.0	2.7	0.9	1.4	0.9	4.7	0	3.8
TERMINAL NO.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
IC101	0.7	0	0	2.0	0	3.5	3.4	4.3	3.4	0	0	0	0.3	0	0	3.2
TERMINAL NO.	33	34	35	36	37	38	39	40	41	42						
IC101	0	2.3	2.3	4.7	—	4.3	3.9	0.4	0	4.8						
TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC102	4.8	3.2	—	2.8	0	—	—	0	—	—	—	5.5	5.8	5.8	5.9	11.2
IC103	4.8	2.8	−0.2	−0.2	0	4.8	—	4.8								
IC104	11.7	0	0	−0.2	0	13.4	0	—	11.8							
IC105	0	4.8	4.8													
IC201	8.5	8.5	2.9	2.4	2.4	0	8.9	8.9	3.0	3.5	5.5	5.4	6.6	4.8	4.8	2.7
TERMINAL NO.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
IC201	7.9	4.0														
TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC202	0.1	5.5	5.0	5.8	0	4.9	0.1	0.1	3.8	0.1	0.4	3.7	0.7	4.4	4.3	6.8
TERMINAL NO.	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
IC202	8.9	3.5	0	5.0	5.0	8.9	2.2	4.5	7.6	0.2	4.5	5.7	5.8	4.1		
TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC301	8.6	7.9	8.6	6.4	6.4	11.9	3.7	6.4	6.4	5.8	5.7	5.2	5.2	8.0	5.5	10.3
TERMINAL NO.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
IC301	3.4	4.5	0	2.0	2.0	11.3	5.6	5.7	5.8	3.2	11.0	3.2	1.5	9.0	7.0	7.0
TERMINAL NO.	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
IC301	7.0	3.5	0.6	0.7	—	6.5	2.2	8.6	3.3	3.2	3.4	3.3	3.5	3.4	6.9	2.6
TERMINAL NO.	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
IC301	6.9	0	0	0.1	0	4.2	5.9	3.2	5.4	4.8	3.7	6.1	11.9	6.1	11.9	7.9

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC302	16.2	0	12.0													
IC501	0	12.8	25.0	1.3	—	1.3	24.6									
IC601	−42.3	0.2	—	0	5											
IC602	0	1.2	0	0												
IC621	26.0	0	4.9													
IC701	5.3	0	4.0	4.6	4.1	3.7	0	0	4.2	3.9	10.9	5.3	5.2	4.0	4.6	10.2
TERMINAL NO.	17	18	19	20	21	22	23	24								
IC701	4.0	10.2	0	3.4	0	4.6	—	5.2								
TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12				
IC801	5.6	11.5	8.0	4.0	5.5	4.0	0	5.5	4.0	8.0	4.0	2.2				
IC802	1.9	3.0	0	2.9	1.9	6.5	9.6	—	19.3	−0.3	—	9.4				

Q' No.	Q101	Q102	Q103	Q104	Q105	Q107	Q108	Q109	Q110	Q111
BASE	0.2	−0.4	0	0.5	6.1	−0.2	4.1	4.2	−0.2	0.7
COLL.	12.7	3.8	4.5	12.0	11.9	4.2	3.5	3.6	3.7	0.7
EMIT.	0	0	0	1.9	5.3	1.4	3.5	3.6	1.7	0.3

Q' No.	Q113	Q114	Q115	Q116	Q117	Q118	Q201	Q202	Q203	Q204
BASE	−0.7	0.3	4.4	0.3	0.6	0	1.2	4.1	5.9	9.6
COLL.	3.9	4.8	2.5	4.8	0.7	4.1	7.5	0	11.8	11.8
EMIT.	0	0	0	0	0	0	0.5	4.7	5.2	8.9

Q' No.	Q205	Q301	Q302	Q303	Q304	Q305	Q306	Q307	Q308	Q309
BASE	3.2	4.9	−0.7	0.7	2.4	5.0	6.0	0	0	−0.7
COLL.	8.9	11.9	11.9	0.1	11.9	0	0	6.7	5.6	0
EMIT.	2.5	4.4	0	0	1.7	5.6	5.6	0	0	0

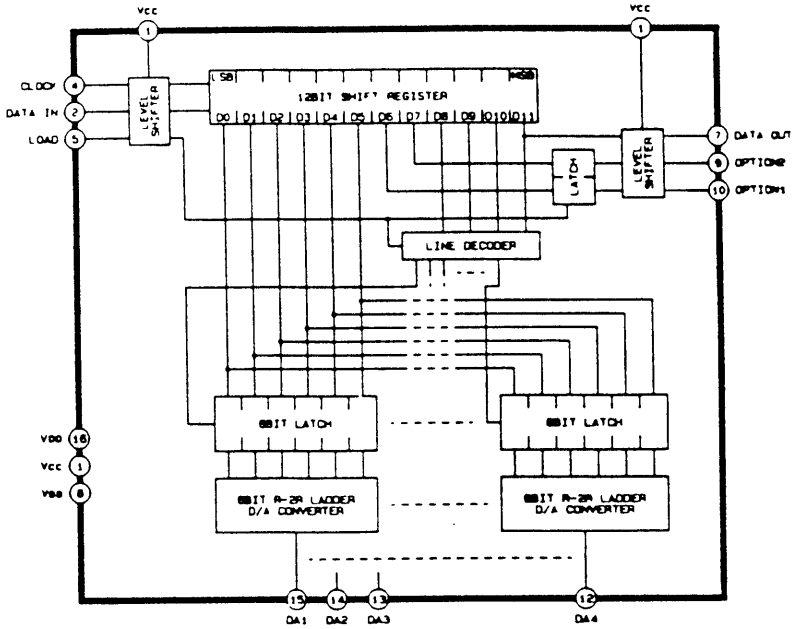
Q' No.	Q310	Q451	Q452	Q453	Q551	Q552	Q553	Q554	Q601	Q602
BASE	10.7	3.4	3.2	3.4	0.5	0.1	—	0	0	0.2
COLL.	11.9	151.7	155.2	150.6	24.0	115.2	0	16.2	0.1	0
EMIT.	10.2	3.0	2.8	3.1	0	0	4.9	0	0.2	0.2

Q' No.	Q603	Q604	Q621	Q701	Q702	Q703	Q704	Q705	Q706	Q707
BASE	0	0	0.6	1.3	1.3	4.2	4.7	3.4	4.7	0.7
COLL.	0.2	0.2	0	0	0	0	0	0	0	0
EMIT.	0	0	0	2.0	2.0	4.9	5.3	4.1	5.3	0

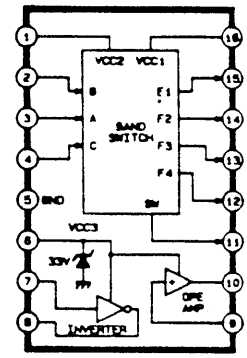
Q' No.	Q801	Q802	Q803	Q804	Q805	Q806
BASE	1.5	1.5	6.0	6.0	−0.1	−0.2
COLL.	3.2	3.5	11.8	11.8	0.3	0.3
EMIT.	1.0	1.0	5.4	5.4	0.3	0.3

IC BLOCK DIAGRAM

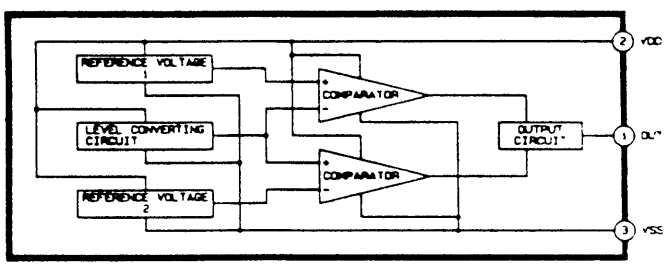
IC102
[μPD6335C]



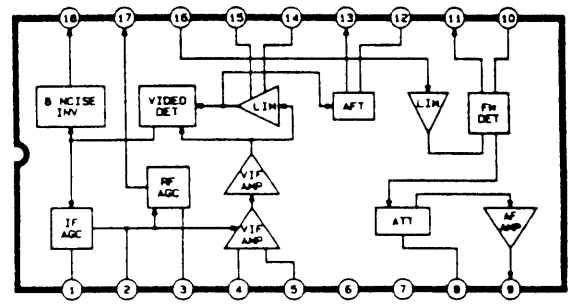
IC104
[LA7910]



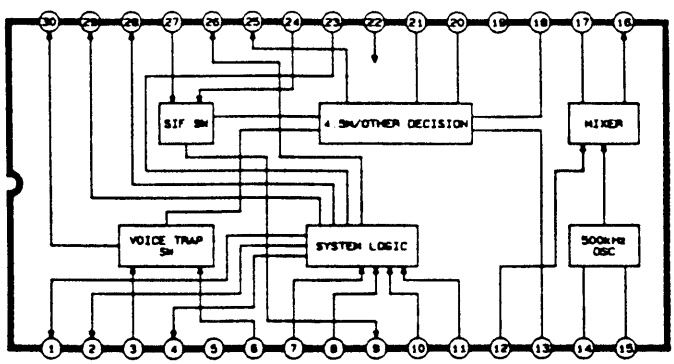
IC105
[MN1280R]



IC201
[M51496P]

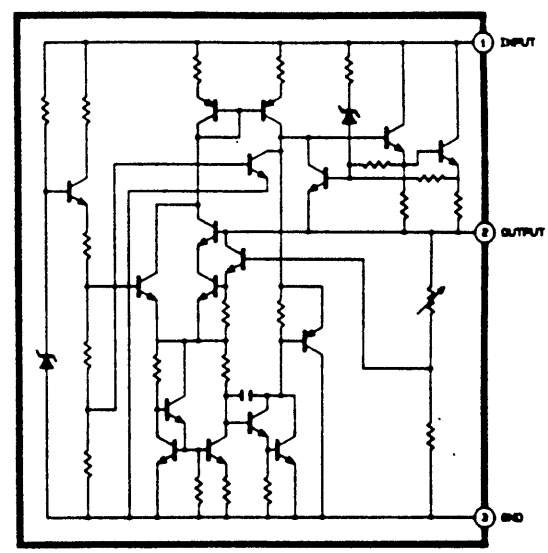


IC202
[TA8615N]

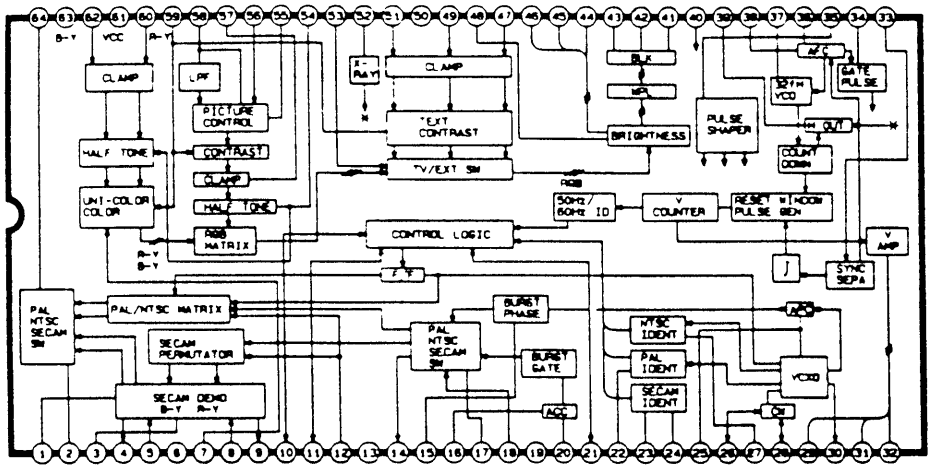


IC302
[TA78012A]

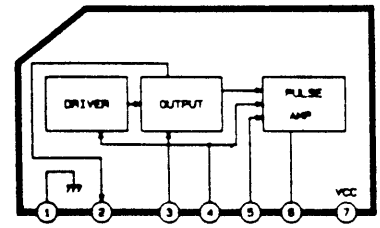
IC621
[TA78005A]



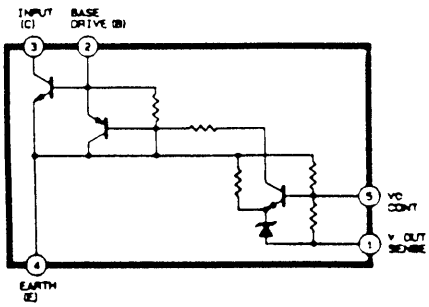
IC301
[TA8659AN]



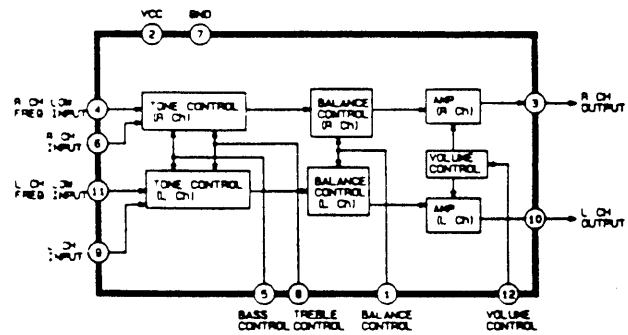
IC501
[AN5515]



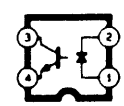
IC601
[STR59041]



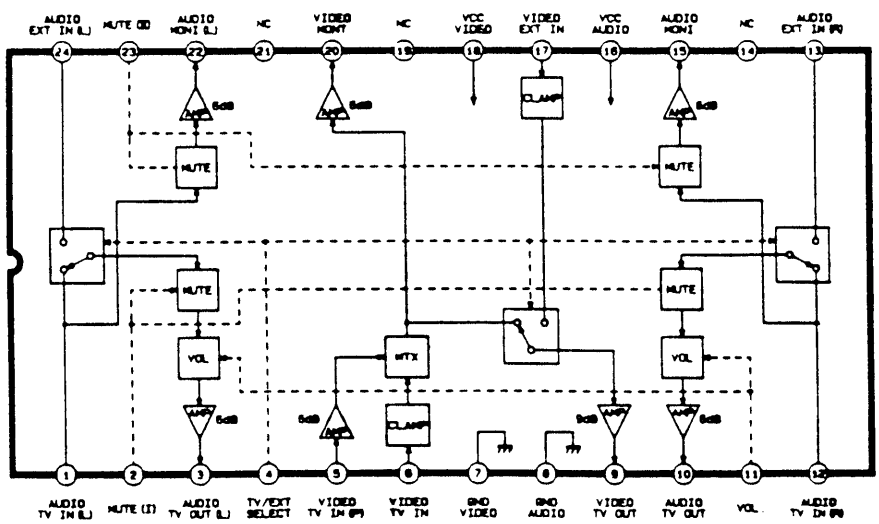
IC801
[AN5836]



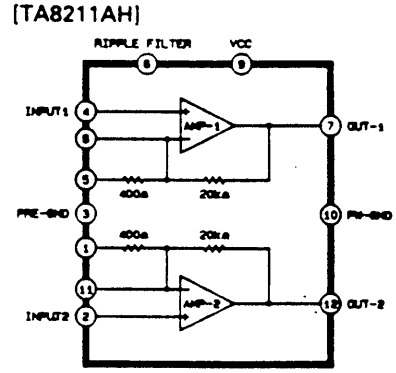
IC602
[ON3161(R)]



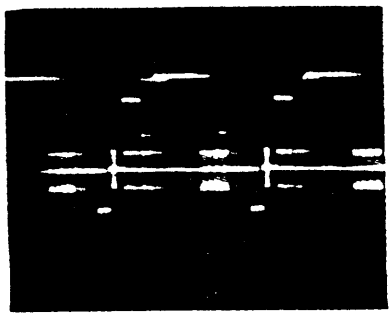
IC701
[TA8628N]



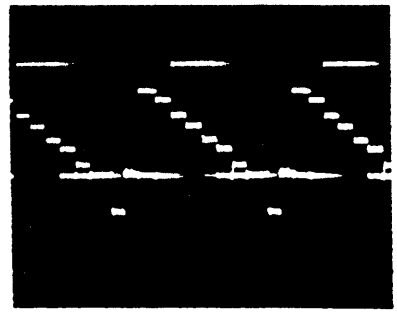
IC802
[TA8211AH]



CHASSIS WAVEFORMS

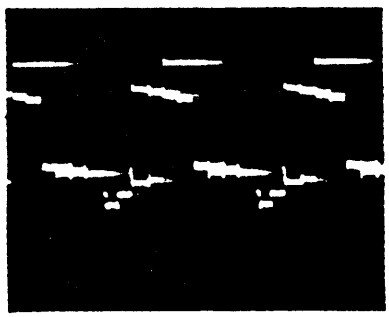


WF-1 2.8Vp-p(H)

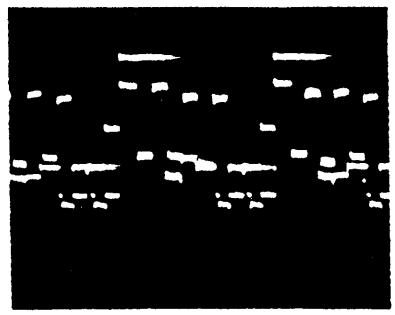


WF-2 3.2Vp-p(H)

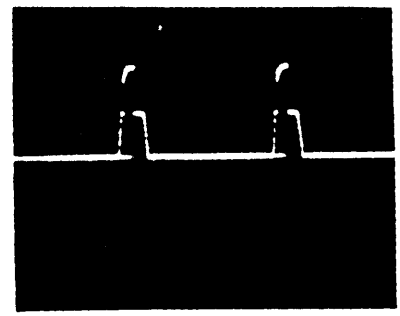
WF-3 2.2Vp-p(H)



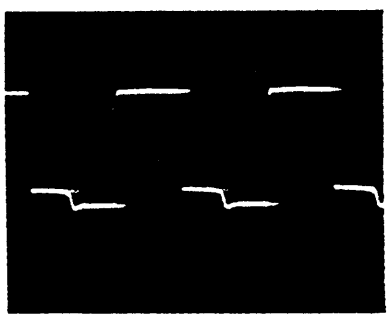
WF-4 3.6Vp-p(H)



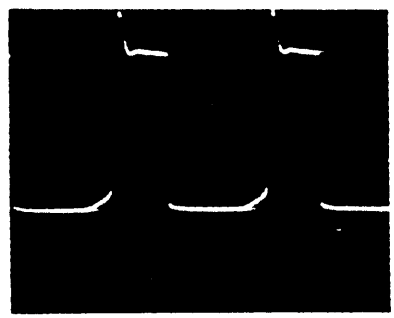
WF-5 3.6Vp-p(H)



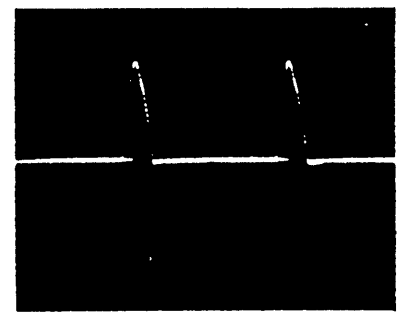
WF-6 2.0Vp-p(H)



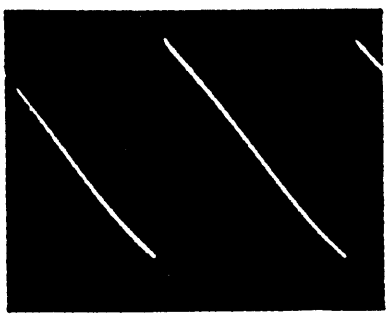
WF-7 2.6Vp-p(H)



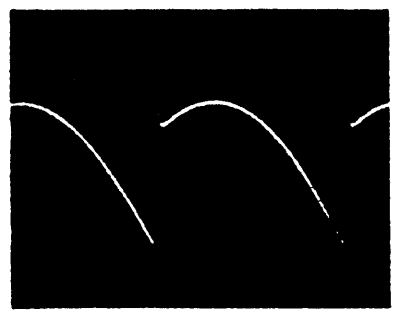
WF-8 4.2Vp-p(H)



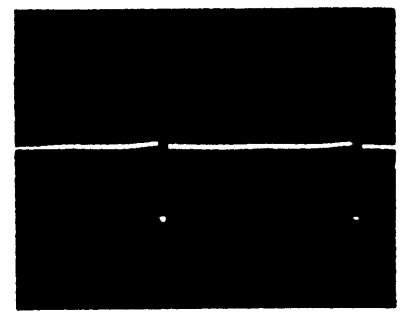
WF-9 220Vp-p(H)



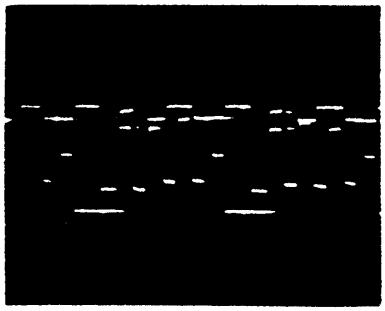
WF-10 5.0Vp-p(V)



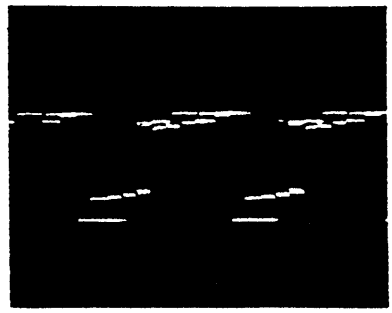
WF-11 3.0Vp-p(V)



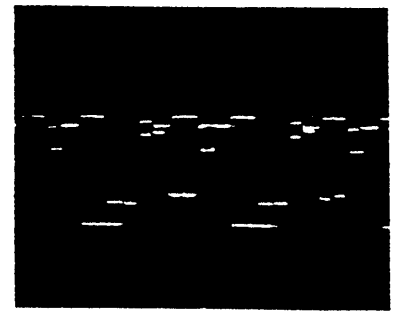
WF-12 1.8Vp-p(V)



WF-13 2.2Vp-p(H)



WF-14 2.2Vp-p(H)



WF-15 2.2Vp-p(H)

NOTES:

WAVEFORMS SHOWN WERE PRODUCED USING A PATTERN GENERATOR WITH ITS CONTROL SET TO PRODUCE A COLOR BAR SIGNAL AND A WIDEBAND OSCILLOSCOPE WITH LOW CAPACITY PROBE TO PREVENT LOADING. RECEIVER OPERATING CONTROLS WERE ADJUSTED TO PRODUCE A NORMAL PICTURE. OSCILLOSCOPE SWEEP WAS SET AT 5 mS FOR VERTICAL WAVEFORMS AND 20 μS OR 10 μS FOR HORIZONTAL WAVEFORMS. PEAK-TO-PEAK VOLTAGES INDICATED MAY VARY DEPENDING ON CALIBRATION OF TEST EQUIPMENT, CHASSIS PARTS TOLERANCES AND CONTROL SETTINGS. ALL WAVEFORMS TAKEN WITH WIDEBAND OSCILLOSCOPE.

VOLTAGE AND WAVEFORMS ARE TAKEN WITH COLOR BAR SIGNAL GENERATOR APPLIED TO THE SET.
WAVEFORMS 1 THRU 20, USE CHASSIS GROUND.

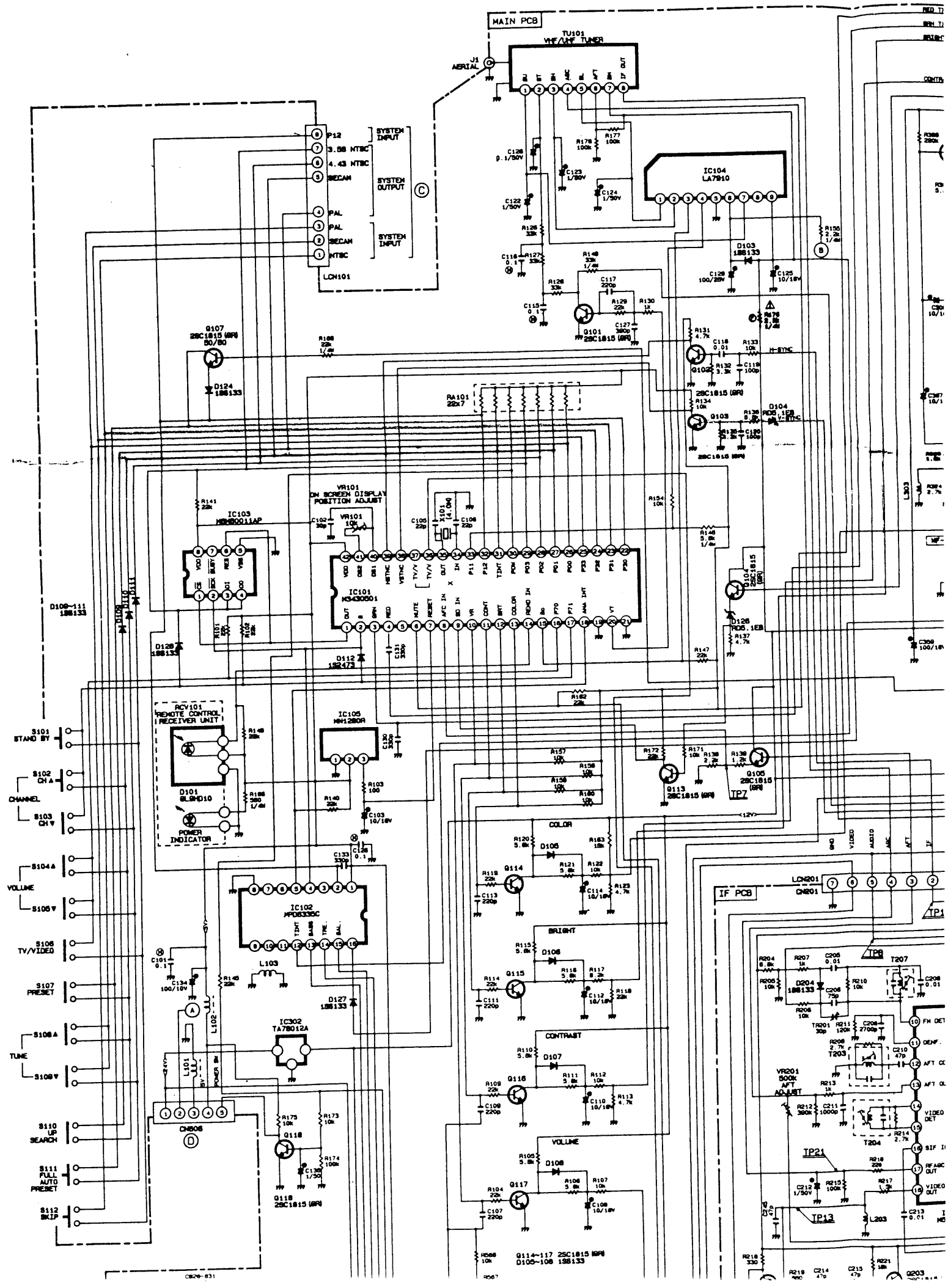
SPECIFICATIONS

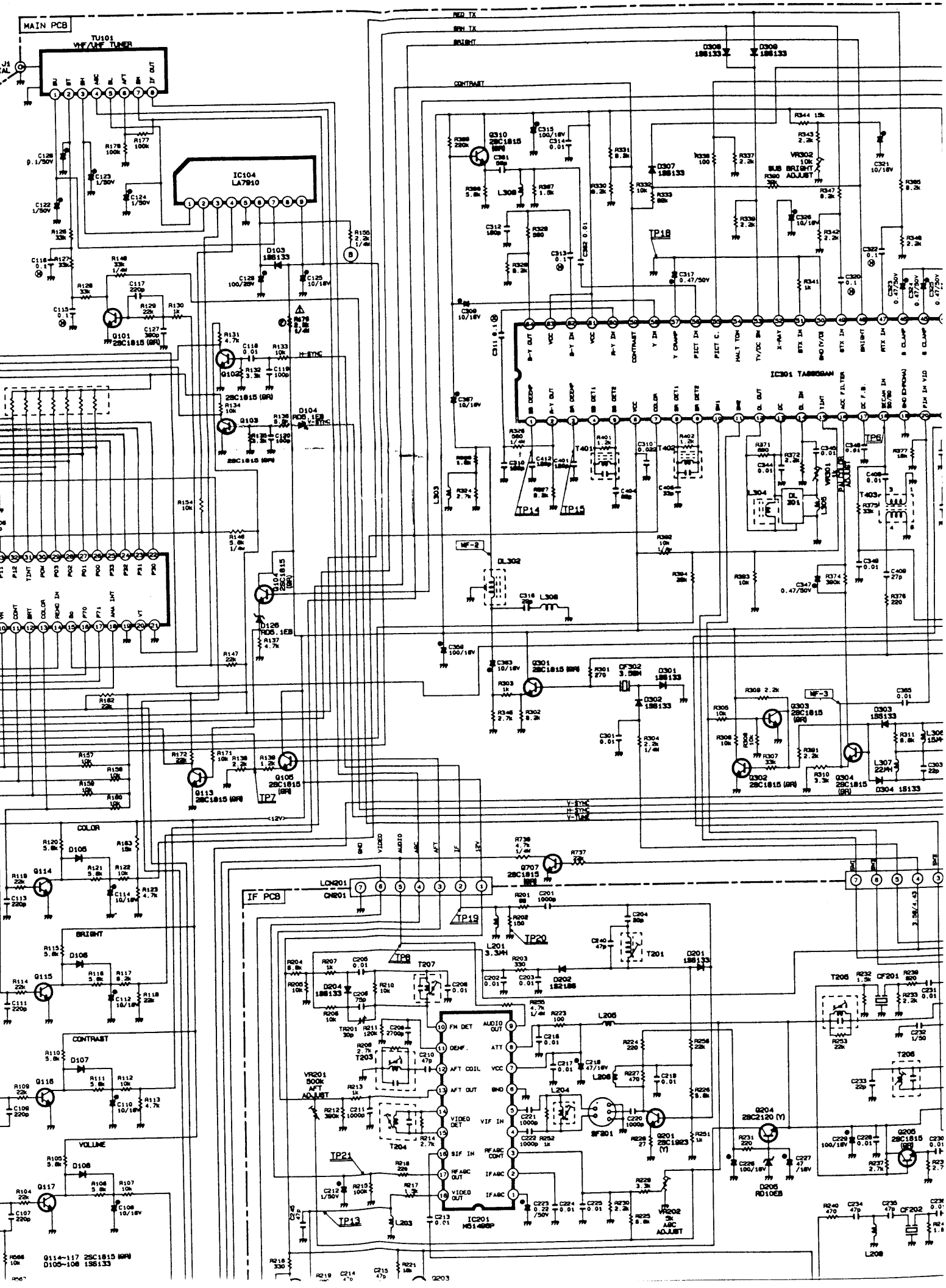
POWER SUPPLY ..... AC90—270V, 50/60 Hz (Automatic Voltage Selection)
POWER CONSUMPTION 110W
PICTURE TUBE ..... 540 mm Picture (measured diagonally) 90° Deflection
RECEIVING SYSTEM:
Broadcast ..... PAL-B/G, PAL-I, PAL-D/K
VCR & LD Playback ..... SECAM-B/G, SECAM-D/K, NTSC-M
Special VCR Playback ..... NTSC-B/G (3.58 MHz, 4.43 MHz)
NTSC-I (3.58 MHz, 4.43 MHz)
NTSC-D/K (3.58 MHz, 4.43 MHz)
VHD Playback ..... PAL-B/G, I, D/K (60 Hz)
SECAM-B/G, I, D/K (60 Hz)
NTSC-B/G (50 Hz)
AUDIO POWER OUTPUT ..... 3W/Channel Max. (Internal Speakers)
7W/Channel Max. (External Speakers)
STEREO HEADPHONES JACK ... CES 3.5 mm

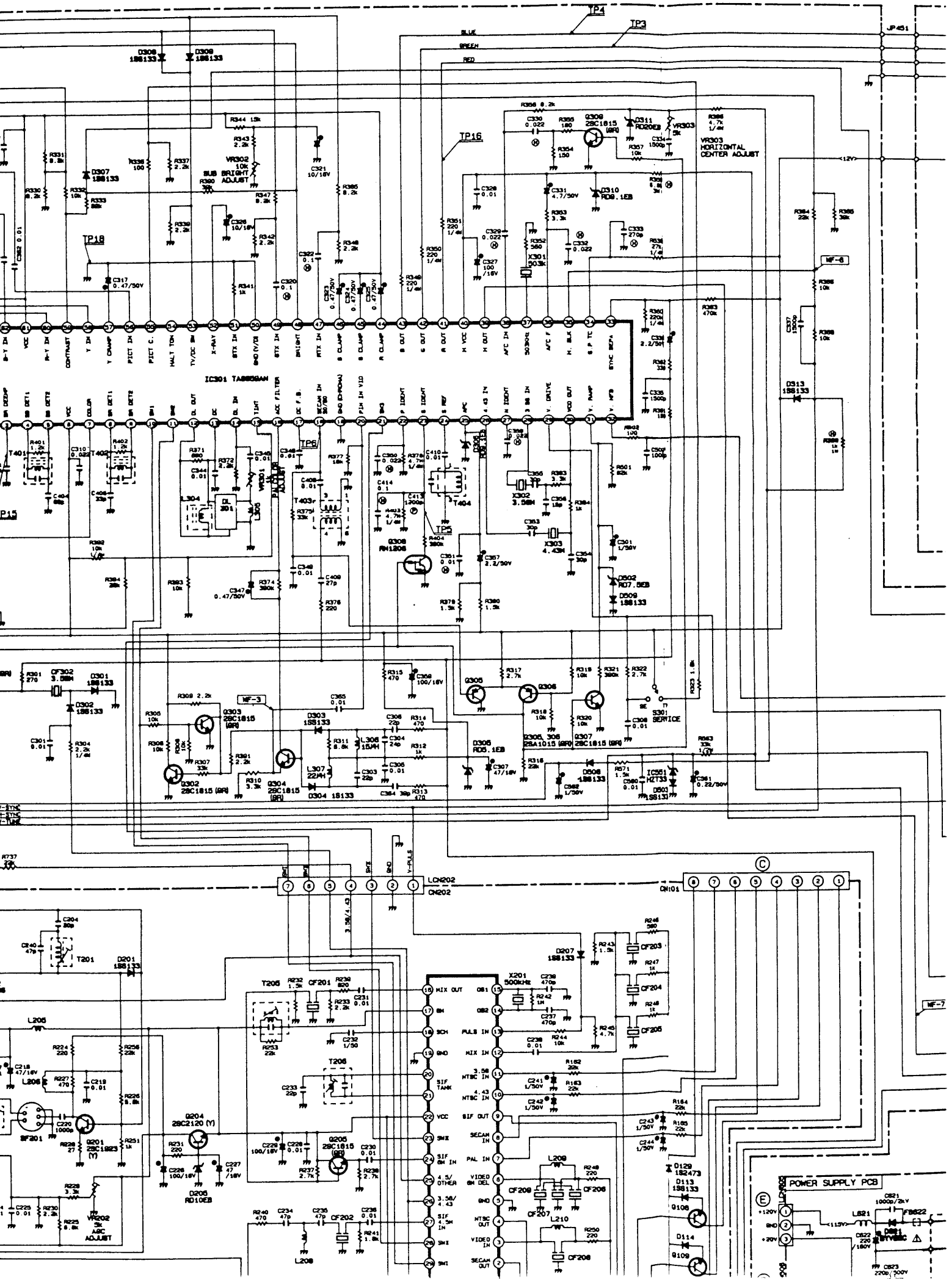
TERMINALS:
Video Input/Output Terminal ..... 1Vp-p/75 ohms
Audio Input/Output Terminal ..... 300 mV
SPEAKERS ..... 90 x 50 mm Oval Type (2pcs.)
EXTERNAL SPEAKER IMPEDANCE .... 8 ohms
ANTENNA SOCKET ..... 75 ohms DIN Type
DIMENSIONS ..... 500 (W) x 476 (H) x 465 (D) mm
WEIGHT ..... 21 kg
RECEIVING CHANNELS (Regular TV):
VHF Band ..... CH2—12 (PAL/SECAM-B/G)
CH1—12 (PAL/SECAM-D)
CH2—9 (SECAM-K1)
CH2—13 (NTSC-M)
UHF Band ..... CH21—69 (PAL/SECAM-B/G, PAL-I)
CH21—69 (SECAM-K)
CH13—57 (PAL-D)
CH14—69 (NTSC-M)

Specifications may be changed without notice.

CHEMATIC DIAGRAM




MAIN PCB
TU101
VHF/UHF TUNER
IC104
LA7910
IC301 TA8859AN
IF PCB
IC201
M51495P
RED TX
GRN TX
BRIGHT
CONTRAST
COLOR
BRIGHT
CONTRAST
VOLUME
H-SYNC
V-SYNC
<12V>
TP6
TP7
TP8
TP13
TP14
TP15
TP18
TP19
TP20
TP21
DL301
DL302
DL303
VR201
500K
AFT
ADJUST
VR202
5K
AGC
ADJUST
VR301
PULSE
ADJUST
VR302
10K
SUB BRIGHT
ADJUST
Q101 2SC1815 (GR)
Q102 2SC1815 (GR)
Q103 2SC1815 (GR)
Q104 2SC1815 (GR)
Q105 2SC1815 (GR)
Q113 2SC1815 (GR)
Q114 2SC1815 (GR)
Q115 2SC1815 (GR)
Q116 2SC1815 (GR)
Q117 2SC1815 (GR)
Q301 2SC1815 (GR)
Q302 2SC1815 (GR)
Q303 2SC1815 (GR)
Q304 2SC1815 (GR)
Q707 2SC1815 (GR)
Q114~117 2SC1815 (GR)
D105~108 1SS133


TP4
TP3
TP16
TP18
TP6
TP5
BLUE
GREEN
RED
JP451
VR303
HORIZONTAL
CENTER ADJUST
VR302
SUB BRIGHT
ADJUST
VR202
AGC
ADJUST
IC301 TA8859AN
S301
SERVICE
LCN202
CN202
CN101
POWER SUPPLY PCB
MF-3
MF-6
MF-7
X201
500KHz
X301
X302
3.58M
X303
4.43M
T201
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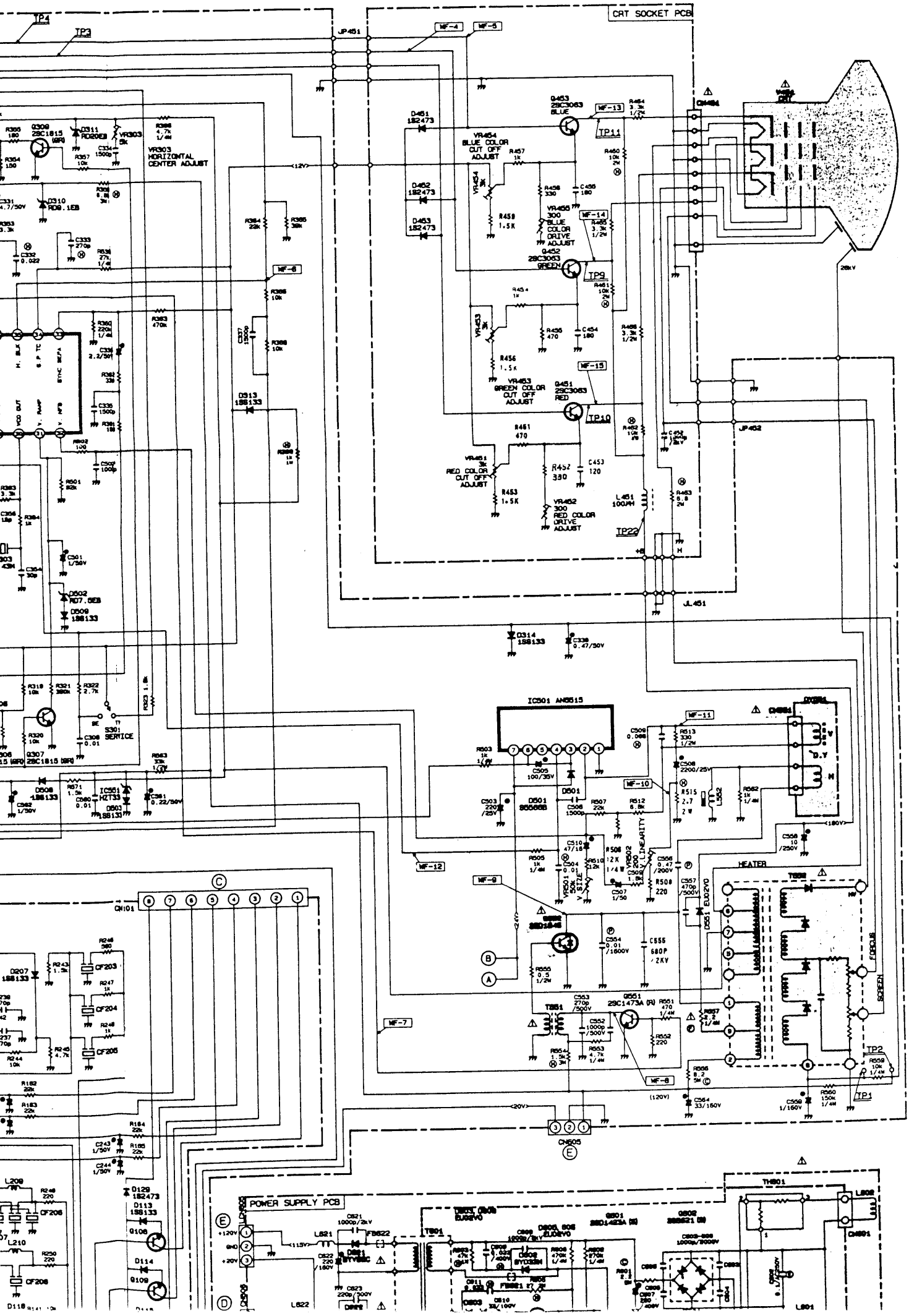
CRT SOCKET PCB
POWER SUPPLY PCB
VR303 HORIZONTAL CENTER ADJUST
VR454 BLUE COLOR CUT OFF ADJUST
VR455 300 BLUE COLOR DRIVE ADJUST
VR453 GREEN COLOR CUT OFF ADJUST
VR452 300 RED COLOR DRIVE ADJUST
VR451 3K RED COLOR CUT OFF ADJUST
IC501 AN6515
S301 SERVICE
HEATER
FOCUS
SCREEN
TP1
TP2
TP9
TP10
TP11
TP22
JP451
JP452
JL451
CN605
CN801
TH801
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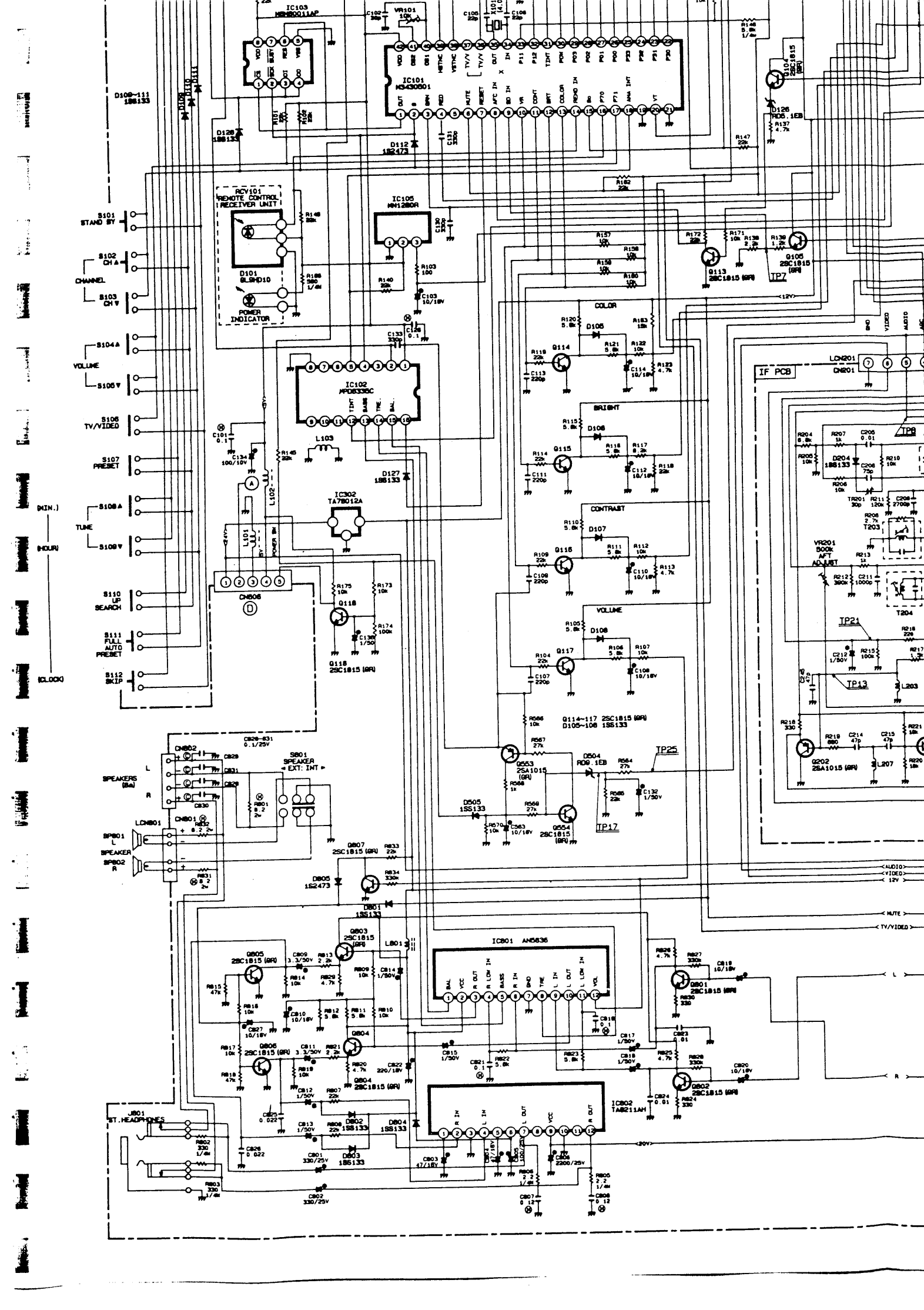
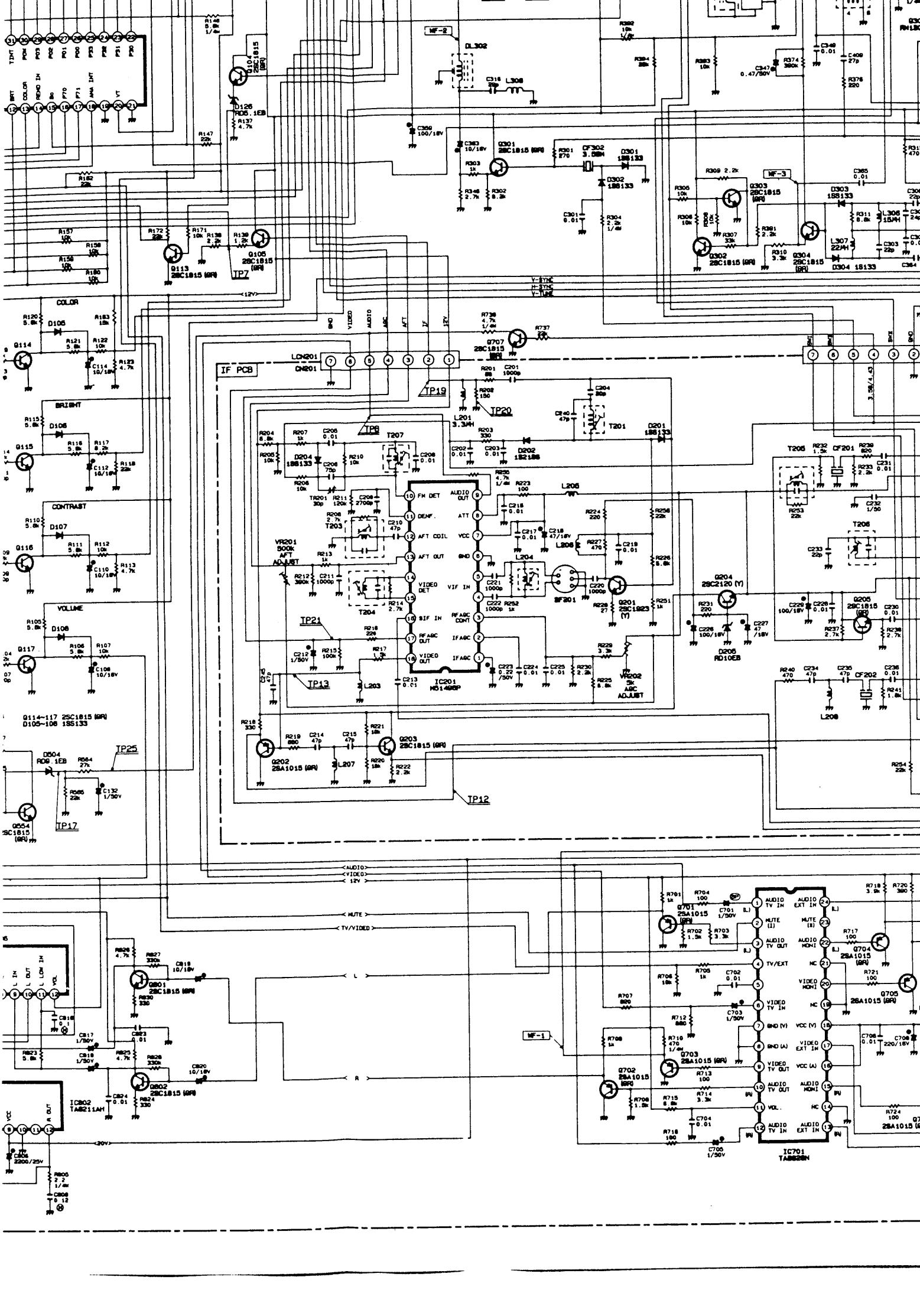
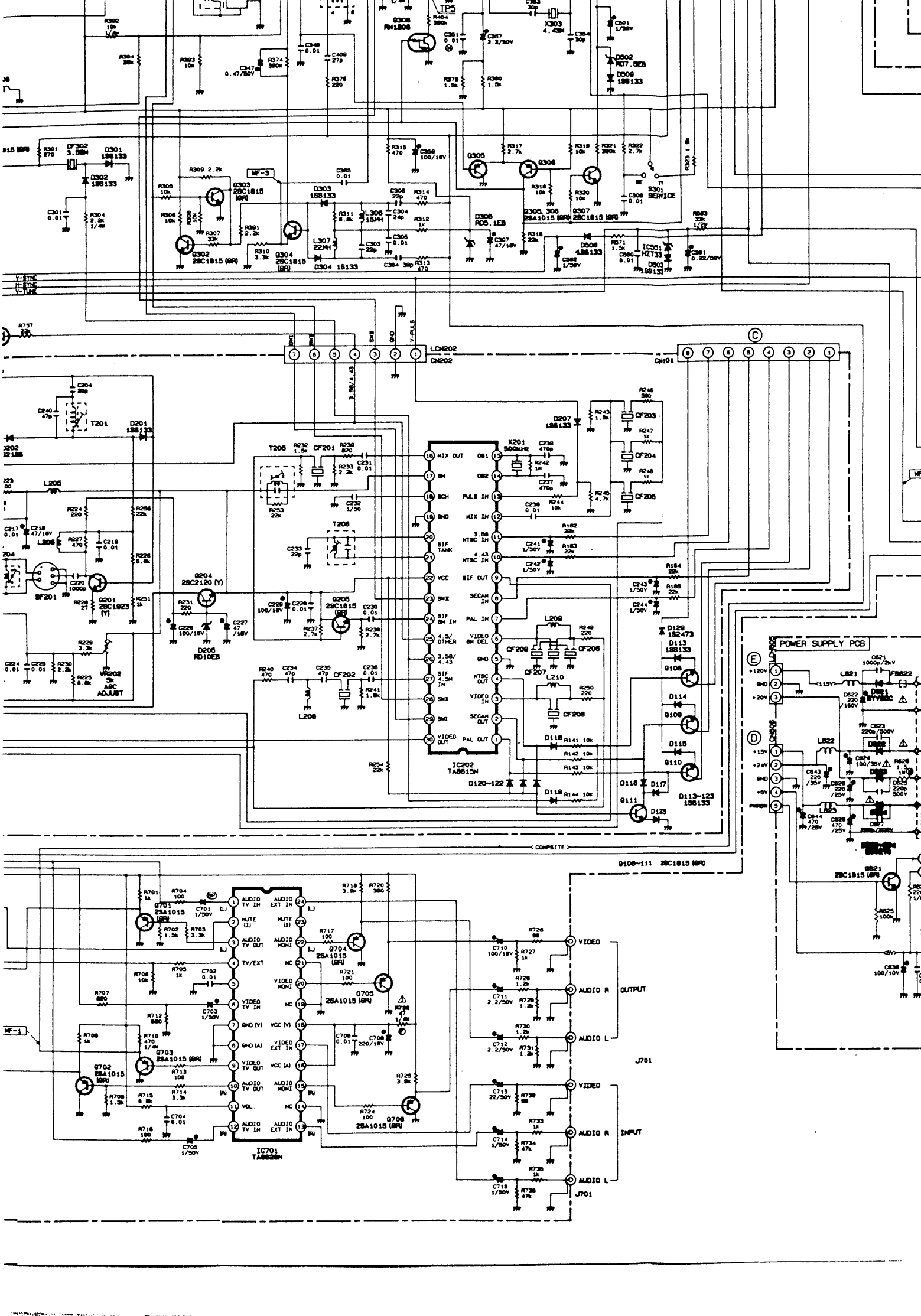
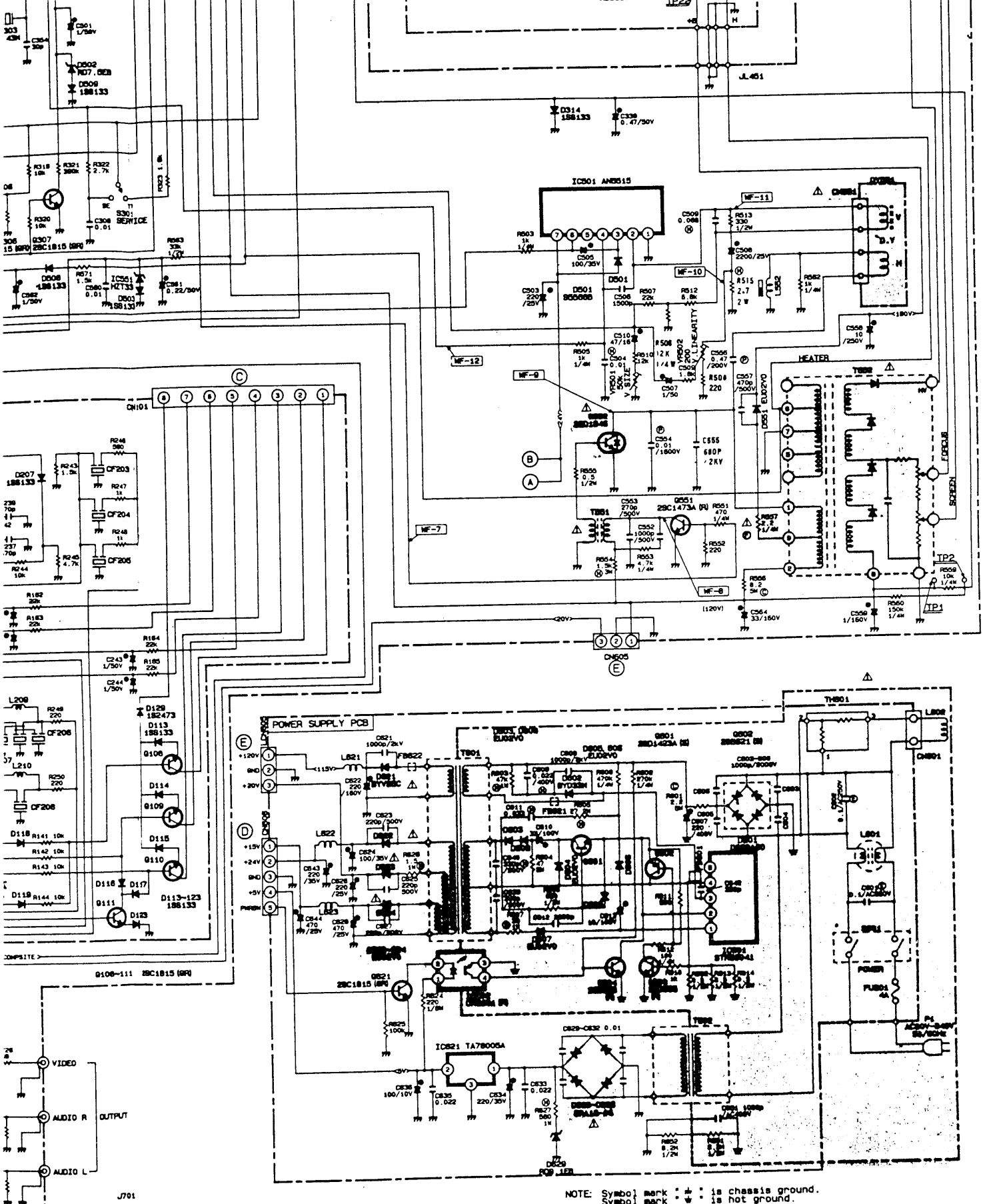

IC103
IC101
IC105
IC102
IC302
RCV101
REMOTE CONTROL RECEIVER UNIT
POWER INDICATOR
S101 STAND BY
S102 CH A
CHANNEL
S103 CH V
S104 A
VOLUME
S105 V
S106 TV/VIDEO
S107 PRESET
S108 A
TUNE
S109 V
S110 UP SEARCH
S111 FULL AUTO PRESET
S112 SKIP
(MIN.)
(HOUR)
(CLOCK)
COLOR
BRIGHT
CONTRAST
VOLUME
IF PCB
SPEAKERS
SPEAKER
ST. HEADPHONES
IC801 AN5836
IC802 TA8211AH
TP25
TP17
TP21
TP13
TP7
TP8
VR201 500k AFT ADJUST
T203
T204
L203
L207
L801
L102
L103
D127 1SS133
D112 1S2473
D805 1S2473
D505 1SS133
D801 1SS133
D802 1SS133
D803 1SS133
D804 1SS133
Q553 2SA1015 (GR)
Q554 2SC1815 (GR)
Q504 RD9.1EB
Q202 2SA1015 (GR)
Q801 2SC1815 (GR)
Q802 2SC1815 (GR)
Q803 2SC1815 (GR)
Q804 2SC1815 (GR)
Q805 2SC1815 (GR)
Q806 2SC1815 (GR)
Q807 2SC1815 (GR)
Q105 2SC1815 (GR)
Q113 2SC1815 (GR)
Q114~117 2SC1815 (GR)
D105~108 1SS133
Q118 2SC1815 (GR)
D104 1SS133
D126 RD5.1EB
CN806
CN802
CN801
CN201
LCN201
LCN801
S801 SPEAKER ◄ EXT: INT ►
SPB01 L
SPB02 R
J801
<AUDIO>
<VIDEO>
<12V>
<MUTE>
<TV/VIDEO>
<30V>

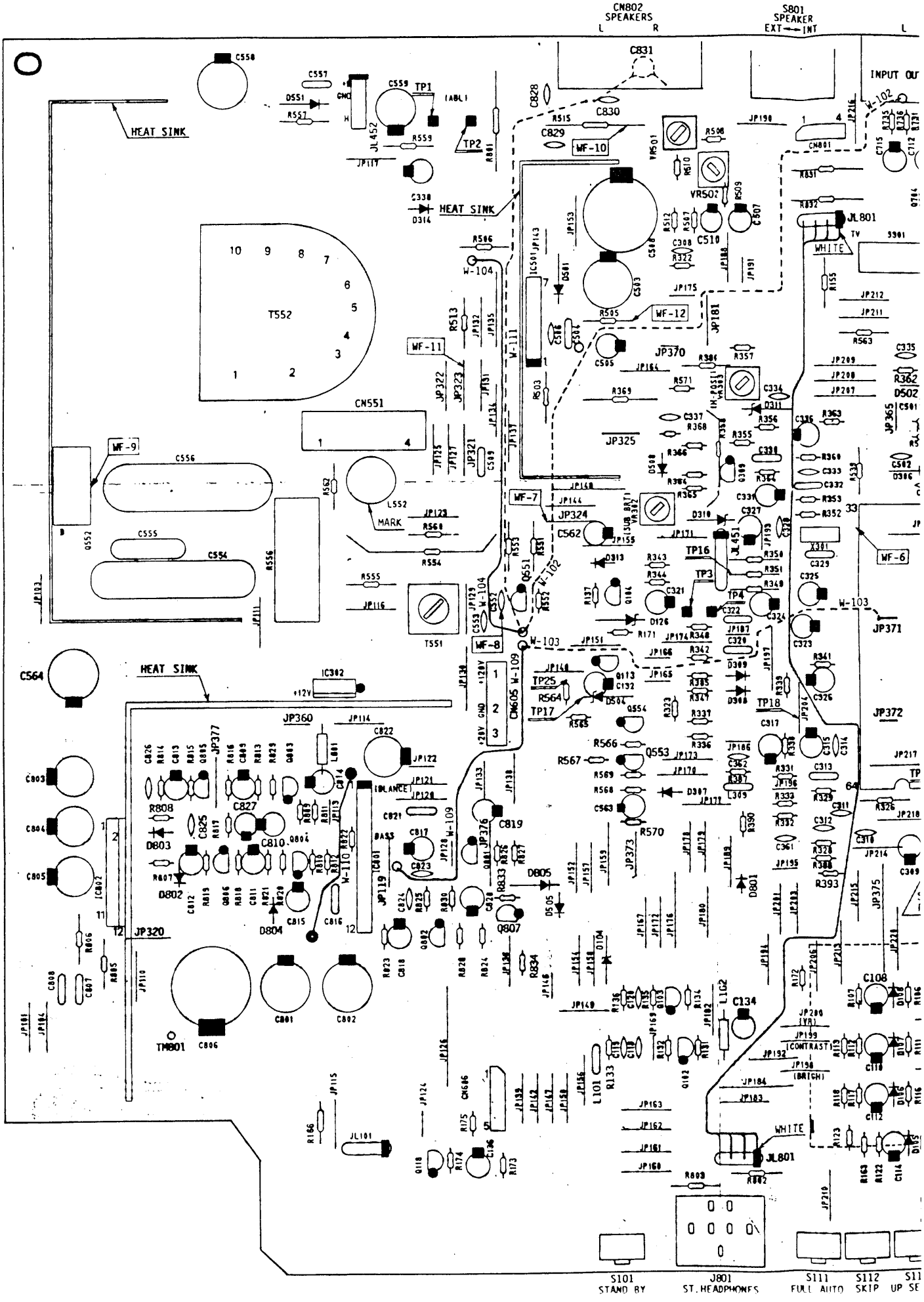

IF PCB
COLOR
BRIGHT
CONTRAST
VOLUME
IC201
M51496P
IC701
TA8281N
IC802
TA8211AH
TP7
TP12
TP13
TP17
TP19
TP20
TP21
TP25
Q114~117 2SC1815 (GR)
D105~108 1SS133

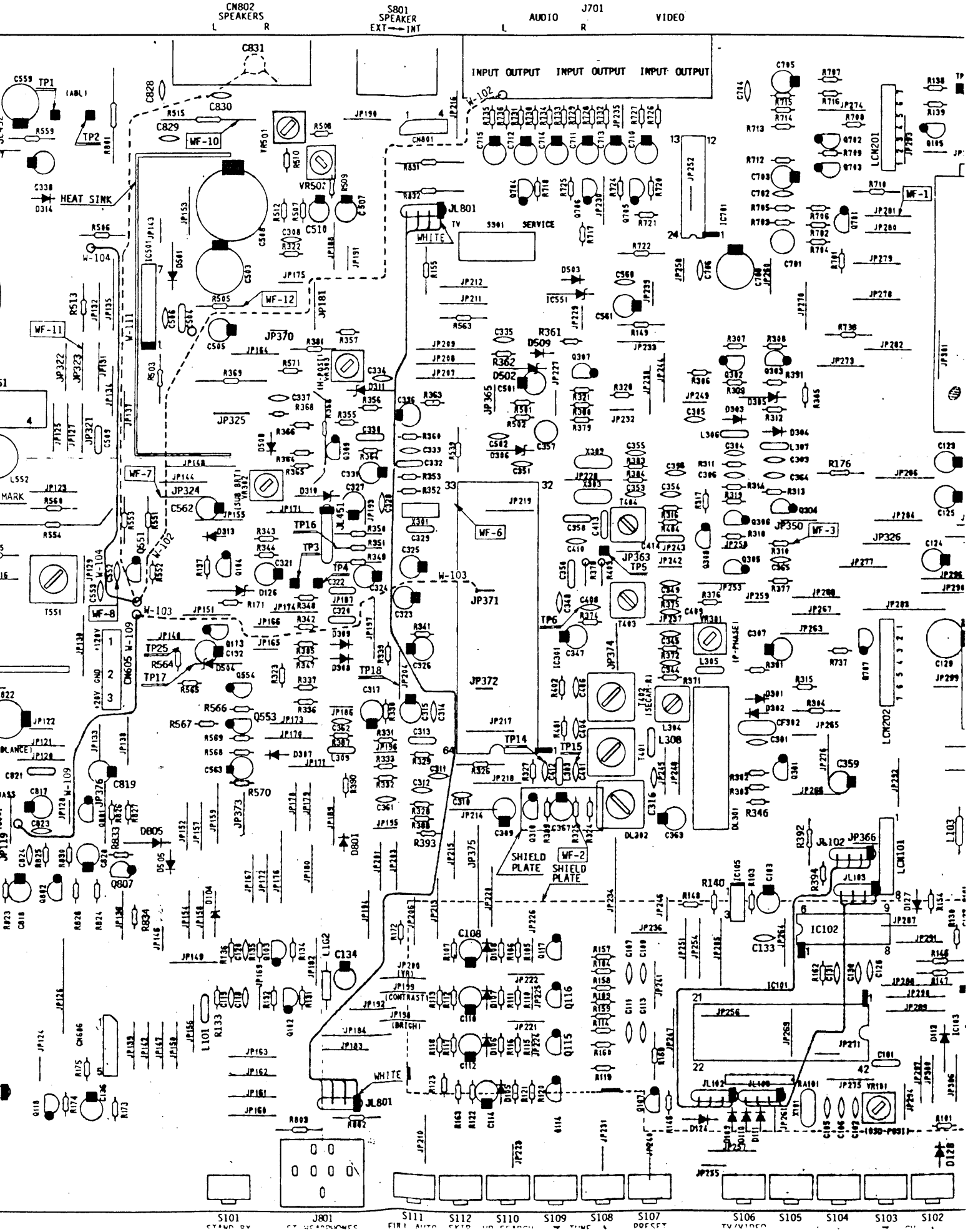

POWER SUPPLY PCB
IC202 TA8615N
IC701 TA8629N
J701
VIDEO
AUDIO R
AUDIO L
OUTPUT
INPUT
S301 SERVICE
COMPOSITE

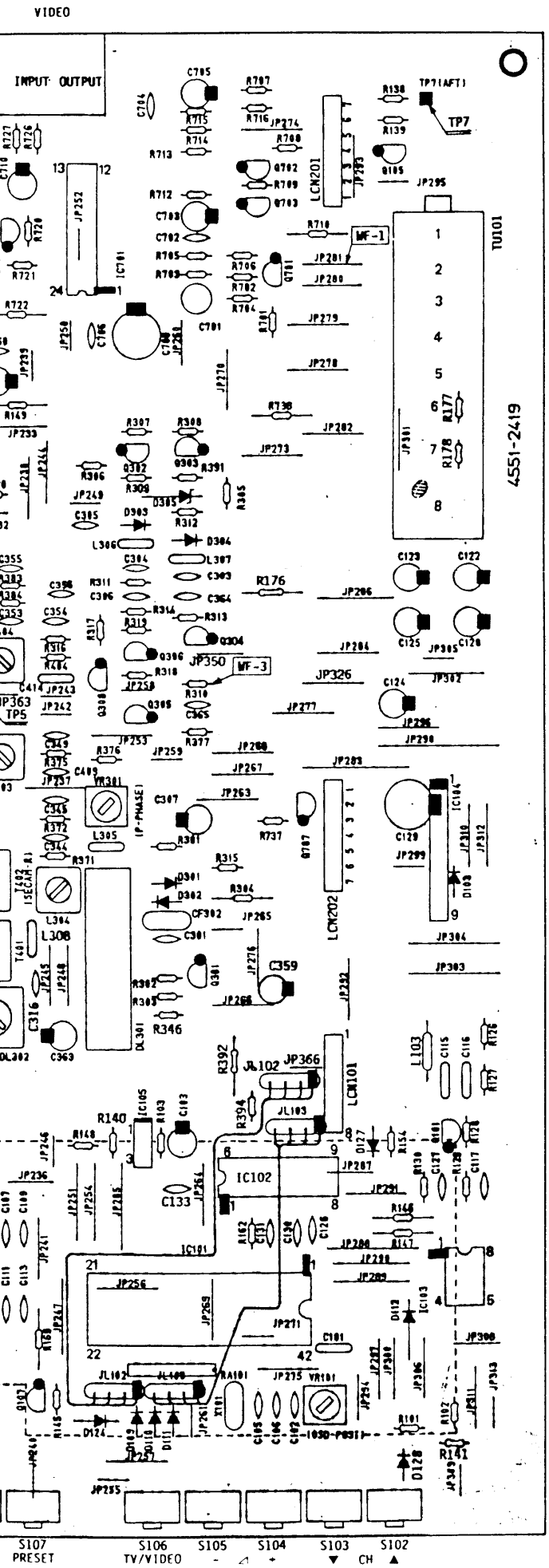

POWER SUPPLY PCB
IC501 AN5515
IC821 TA78005A
VIDEO
AUDIO R
AUDIO L
OUTPUT
INPUT
J701
HEATER
NOTE: Symbol mark "⏚" is chassis ground.
Symbol mark "⏚" is hot ground.

P.C. BOARDS

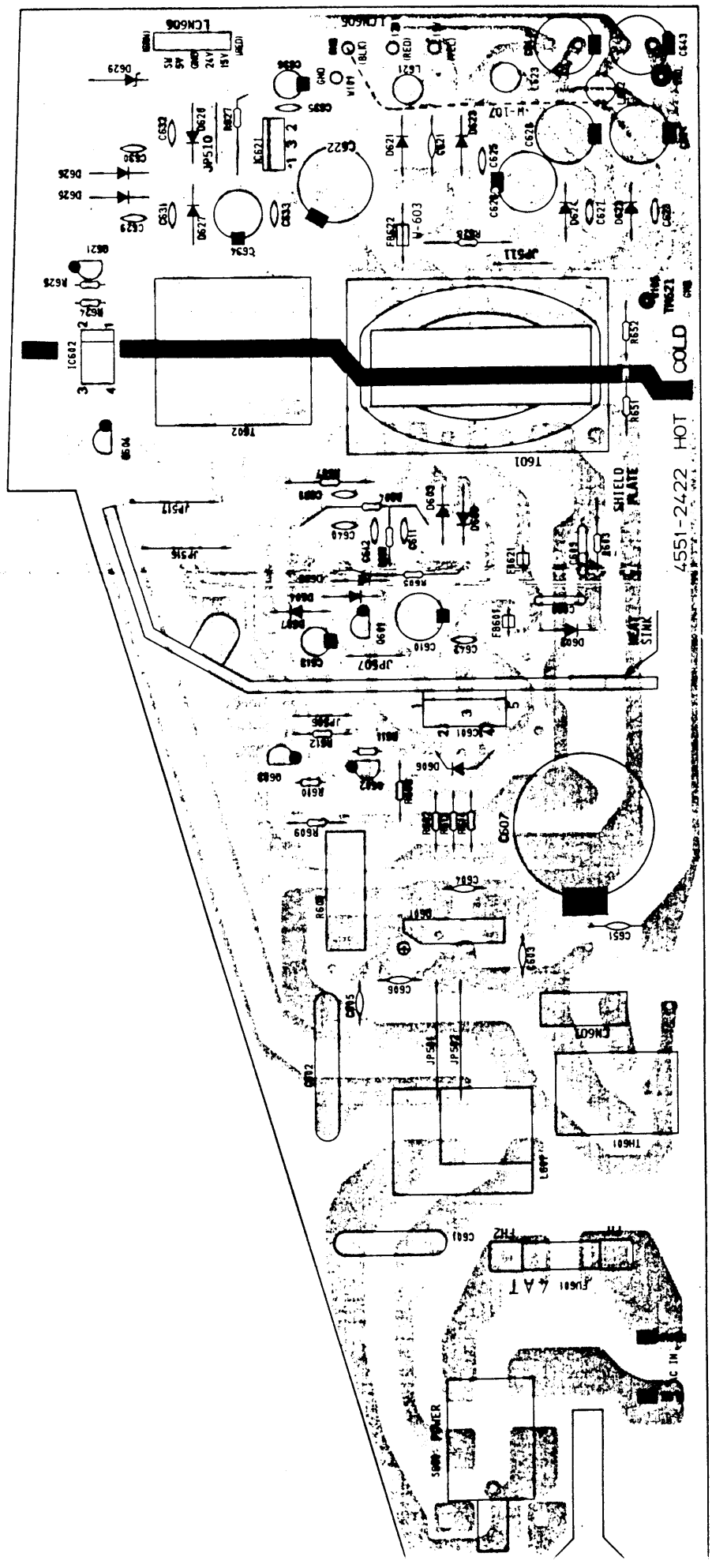
MAIN P.C. BOARD

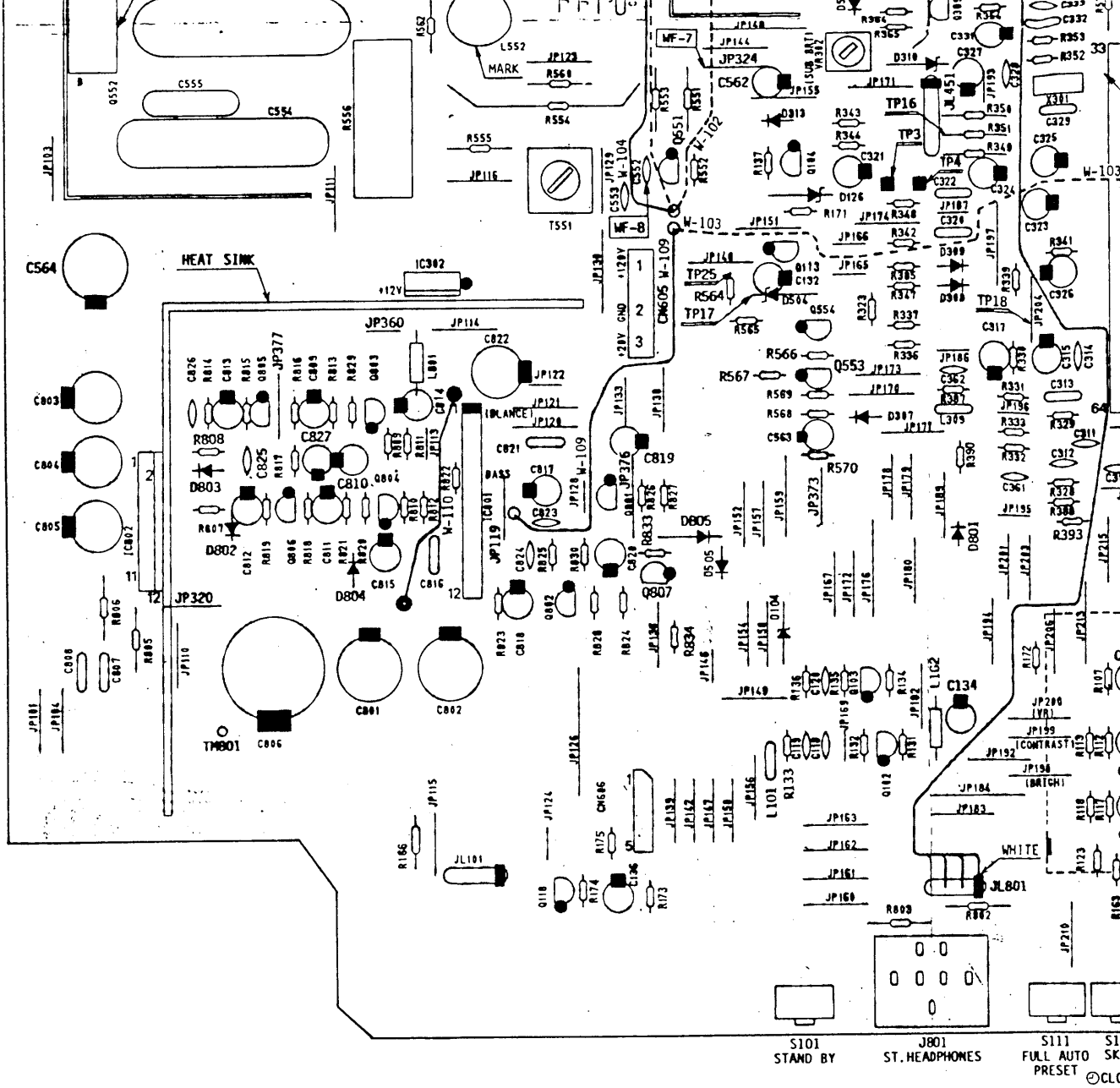



CN802 SPEAKERS L R
S801 SPEAKER EXT INT
J701 AUDIO L R VIDEO
INPUT OUTPUT INPUT OUTPUT INPUT OUTPUT
HEAT SINK
SHIELD PLATE
SHIELD PLATE
WF-1
WF-2
WF-3
WF-6
WF-7
WF-8
WF-10
WF-11
WF-12
S101 S801 S111 S112 S110 S109 S108 S107 S106 S105 S104 S103 S102

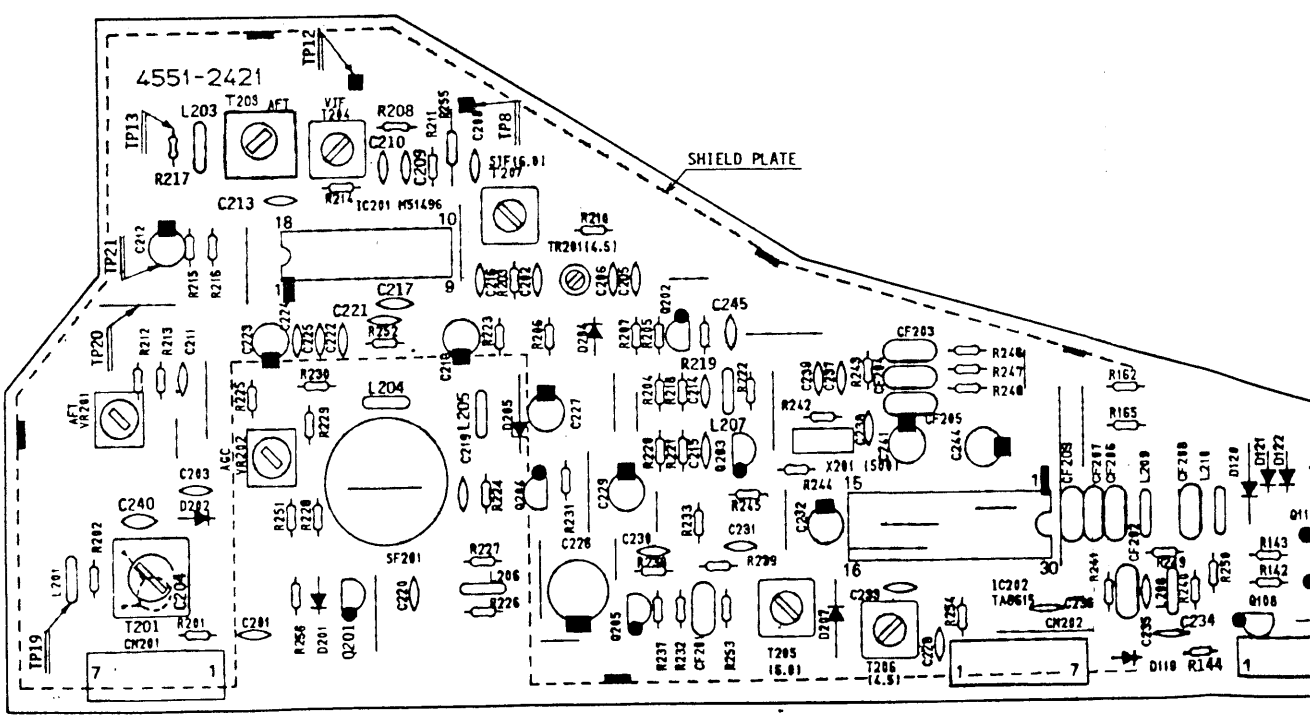

VIDEO
INPUT OUTPUT
TU101
LCN201
LCN202
LCN101
IC102
IC101
TP7(AFT)
TP7
MF-1
MF-3
4551-2419
S107 PRESET
S106 TV/VIDEO
S105 -
S104 +
S103 ▼ CH
S102 ▲

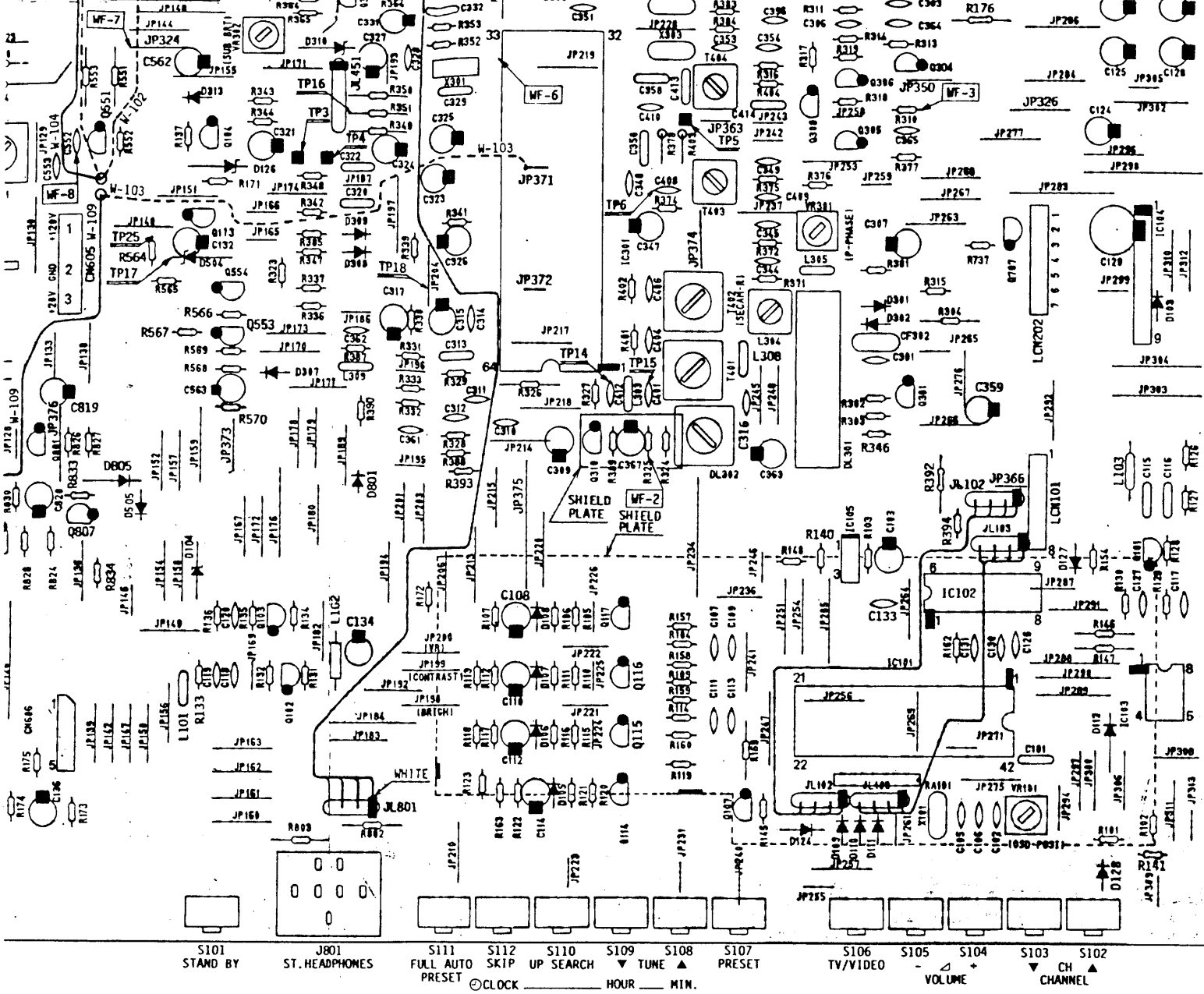
POWER SUPPLY P.C. BOARD




HEAT SINK
MARK
WHITE
S101
STAND BY
J801
ST.HEADPHONES
S111
FULL AUTO
PRESET

IF P.C. BOARD


4551-2421
SHIELD PLATE


S101
STAND BY
J801
ST.HEADPHONES
S111
FULL AUTO
PRESET
S112
SKIP
S110
UP SEARCH
S109
▼ TUNE ▲
S108
S107
PRESET
S106
TV/VIDEO
S105
S104
VOLUME
S103
▼ CH ▲
S102
CHANNEL
CLOCK HOUR MIN.
SHIELD PLATE
WF-2
WF-3
WF-6
WF-7
WF-8
WHITE
JL801
JL102
JL103
JL400
JL451
JL452
IC101
IC102
IC202
CN202
CN401
CN451
CN605
CN606
LCM101
LCM202
W-103
W-104
W-109
TP3
TP4
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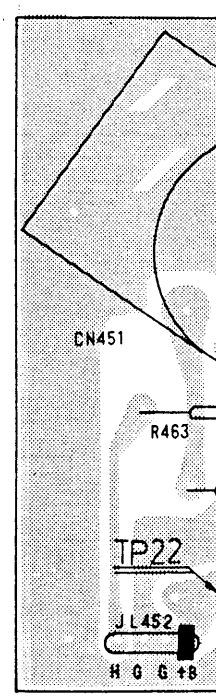
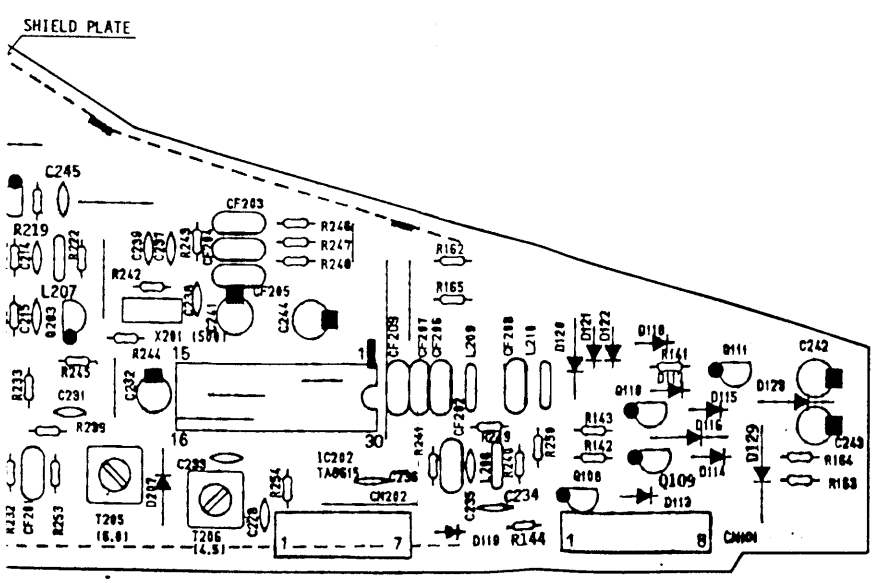
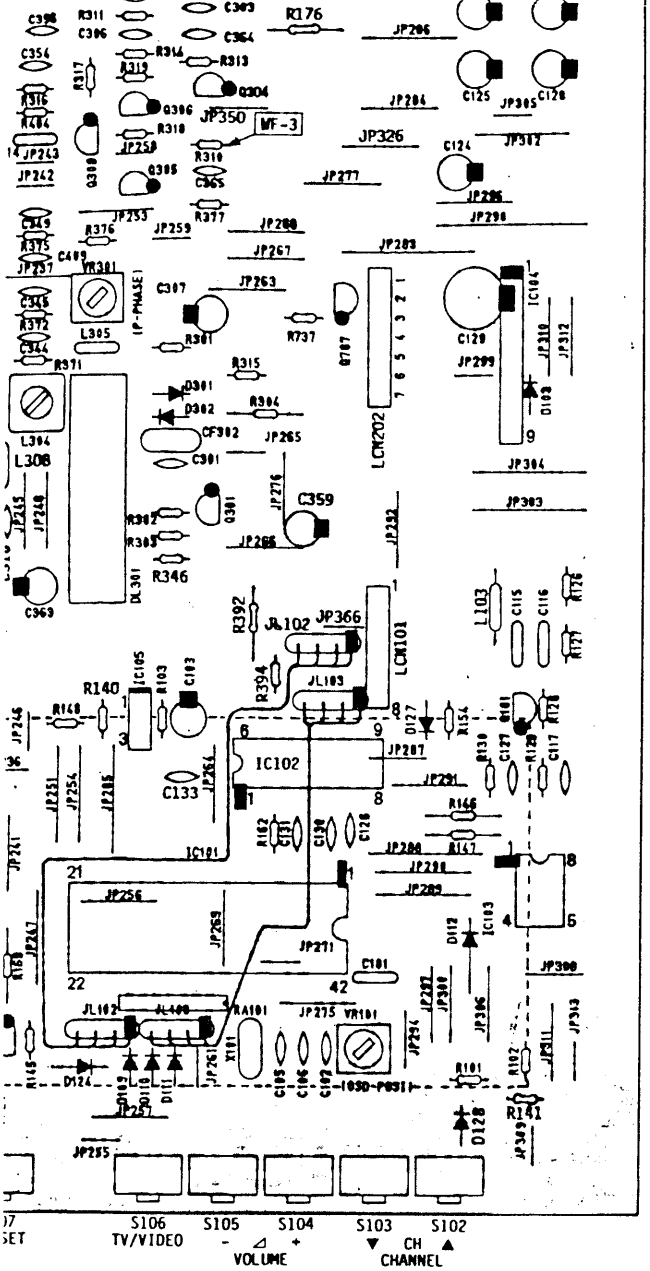
TP14
TP15
TP16
TP17
TP18
TP25

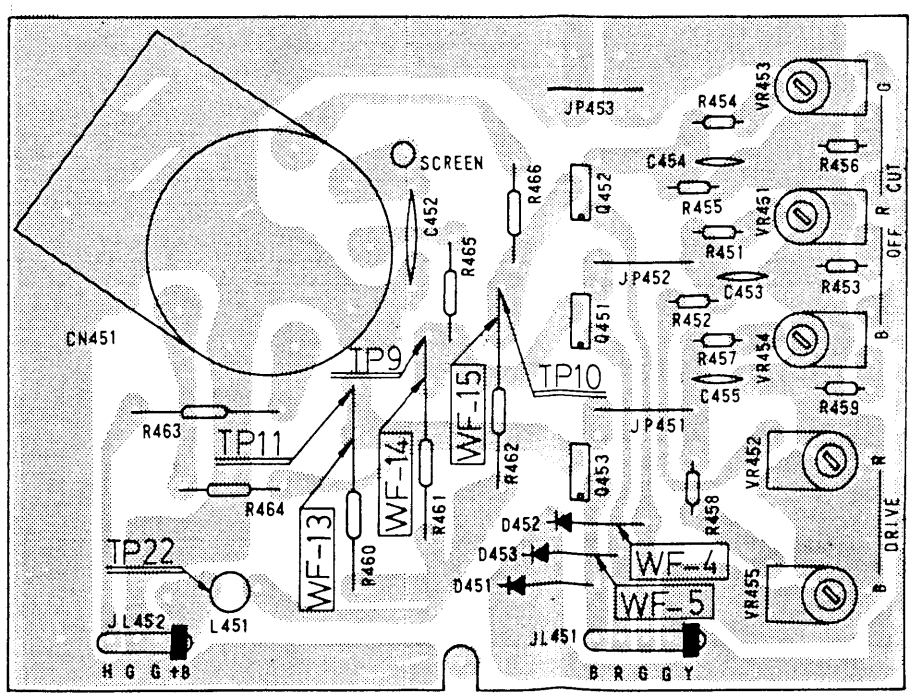
CRT SOCKET

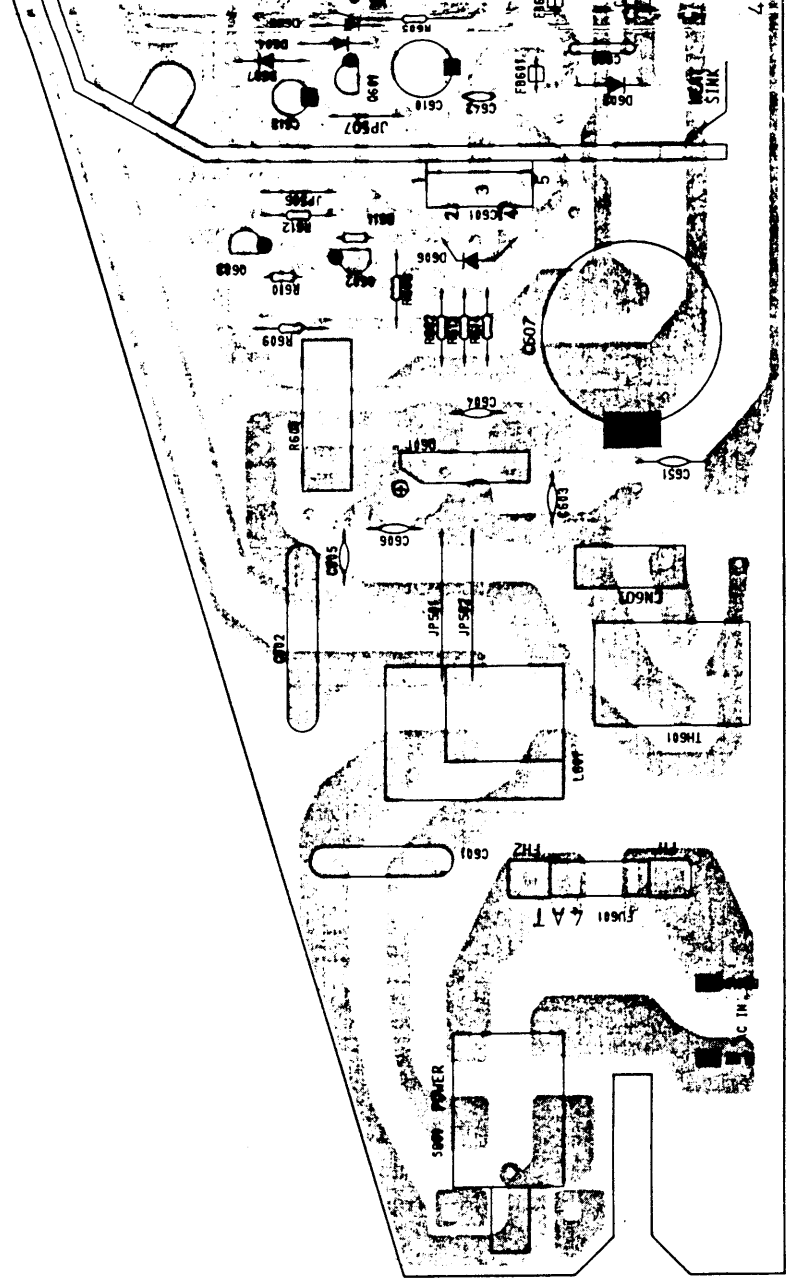

CN451
R463
TP22
JL452
H G G +B

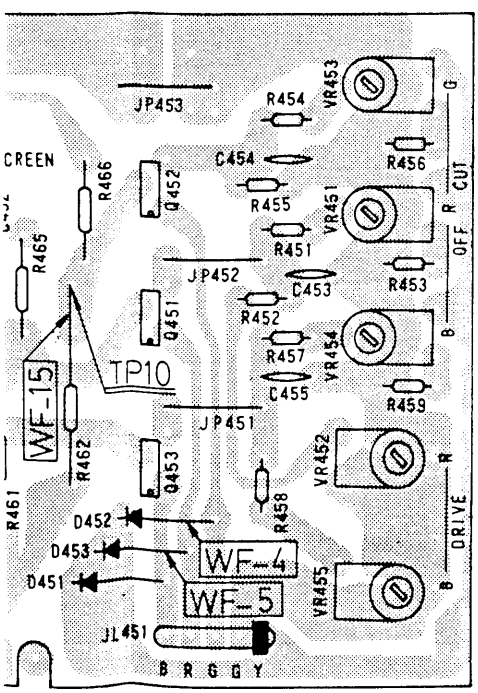

SHIELD PLATE
C245
CF203
R219
R246
R247
R248
L207
R242
CF205
X201 (5MHz)
R244
R165
C242
R143
R142
Q109
Q108
D113
D114
D115
D116
D129
C243
R164
R183
IC202
TA8613
CN202
CN401
T205
T206
R144
D110



CRT SOCKET P.C. BOARD







REMOTE CONTROL RECEIVER P.C. BOARD